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DRIVER EDUCATION



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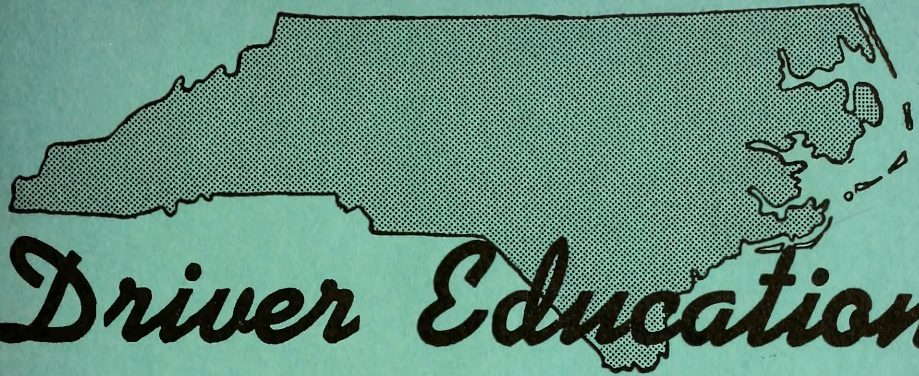
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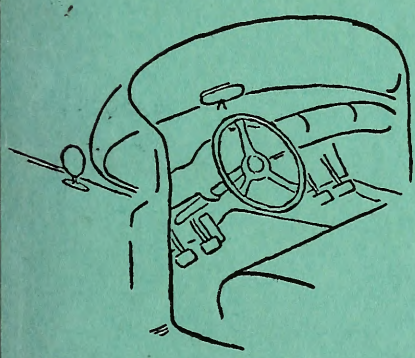
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# *Driver Education*



A MANUAL FOR  
INSTRUCTORS

DEPARTMENT OF PUBLIC INSTRUCTION  
RALEIGH, NORTH CAROLINA  
PUBLICATION NO. 288 1958





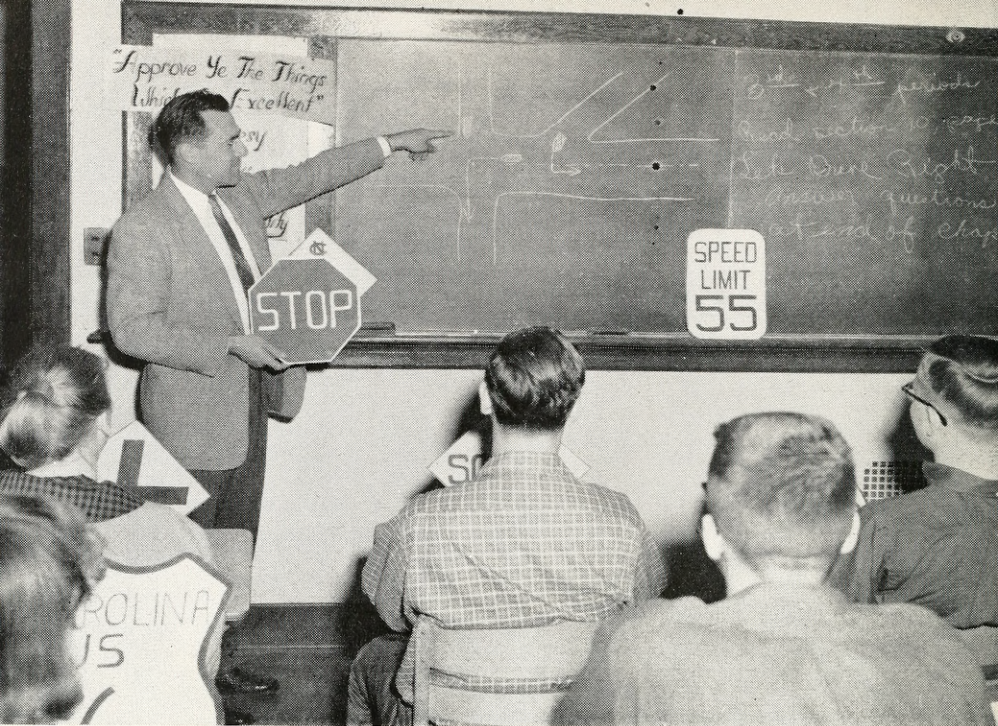
# *Driver Education*



## A MANUAL FOR INSTRUCTORS

DEPARTMENT OF PUBLIC INSTRUCTION  
RALEIGH, NORTH CAROLINA  
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## FOREWORD

Under legislation enacted by the General Assembly of 1957, provision was made to offer driver training and safety education to students in North Carolina public high schools. Whether a county or city school administrative unit avails itself of the opportunity afforded is a matter for each board of education to decide. Because of the values found in driver training and safety education, however, it is believed that all administrative units will institute and conduct this program of instruction.

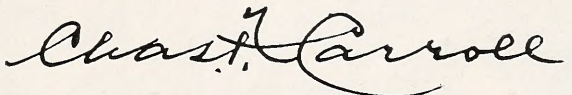
Driver training and safety education will develop a student's ability to operate an automobile safely and efficiently. In so doing, this program has immeasurable potentialities for increasing the human, economic, and social resources of the State.

This manual contains the laws relating to driver training and safety education, rules and regulations governing the program, suggestions for scheduling courses, reimbursement procedures, necessary record forms, and the course of study. In preparing this manual, the Department of Public Instruction has adhered to the guides and standards developed by the National Commission on Safety Education. Likewise, the Department has sought the advice of North Carolina school personnel in order that this program might operate within the framework of sound educational practices.

Appreciation is expressed to all agencies and individuals who have assisted in any manner in the preparation of this bulletin. Constructive suggestions from interested individuals and groups throughout the State give evidence of a growing and vital concern for driver training and safety education in North Carolina.

Special acknowledgement is made of the services of John C. Noe, Carlton T. Fleetwood, and George D. Maddrey, of The Division of Elementary and Secondary Education in the preparation of this bulletin, and to L. H. Jobe, Director of Publications, and J. E. Miller, Assistant Superintendent, for their editorial assistance.

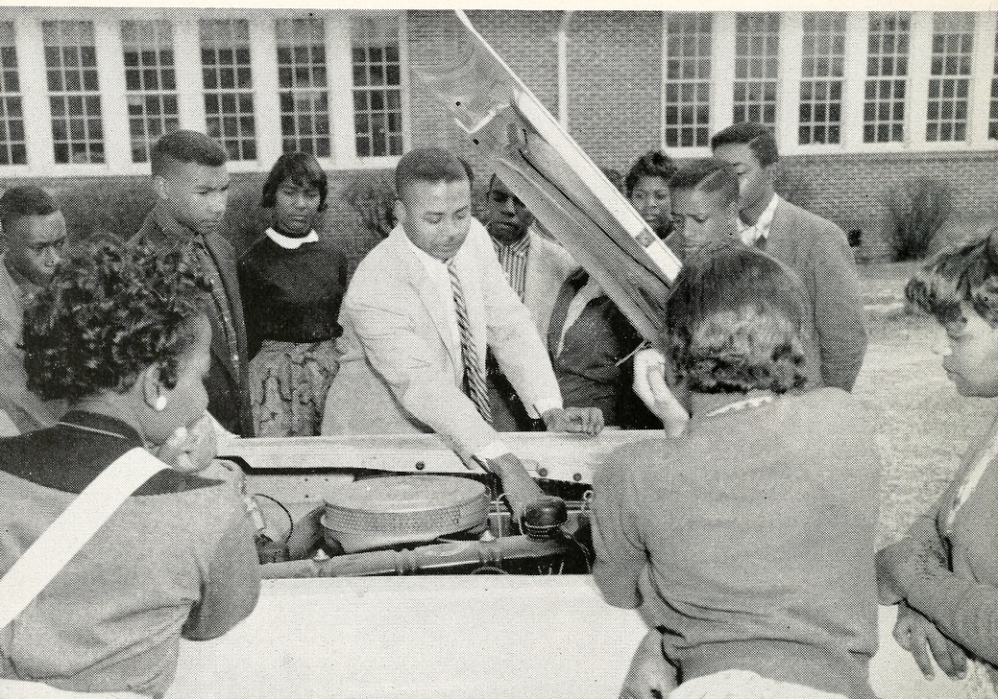
March 10, 1958



State Superintendent of Public Instruction

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# **Planning the Program of Instruction**

## **Purpose**

The primary purpose of this Program shall be that of developing the learner's ability to operate an automobile safely and efficiently with the ultimate purpose of providing opportunities for boys and girls to acquire knowledge, establish desirable attitudes and appreciations, develop habits and skills, and to apply these in such a way as to provide a sound basis for a lifetime of intelligent traffic behavior.

## **Grade Placement**

Education for driving should be made available to a student just prior to the time he attains the age at which one may be licensed to drive. At that time, he is at the peak of his own motivation to learn and soon thereafter will have the opportunity to apply the products of his learning. When students have obtained driving licenses and have been driving prior to receiving the driver education course, the motivation to learn is seriously weakened.

In North Carolina, most students attain minimum legal driving age during the tenth school year; therefore, this course should normally be placed at that grade level.

## **Student Registration and Restricted Instruction Permits**

Students should register for this course during the spring of each school year, at the time of regular course registrations for the following year.

A restricted instruction permit is issued only to a student who is enrolled in a high school driver education course. This permit is valid for use only while the student is accompanied by the driver education teacher in a school driver education car. When these restricted permit forms are filled in and properly signed, the driver education teacher should take custody of them. The teacher should make certain that a permit is in the car for each student as that student drives.

Instructions for obtaining restricted instruction permits and learner's permits for persons enrolled in high school driver education courses may be obtained from the local driver license examiner, or from the Director, Driver Licensing Division, N. C. Department of Motor Vehicles, Raleigh, North Carolina.

## **Selection of Students**

During the expansion of this program to full operating status, those served first should, perhaps, be students who have the



most immediate need for this instruction, such as potential school bus drivers or students needing preparation because of personal or family needs. It is anticipated that all school administrative units will expand this program as rapidly as sound planning and available revenue will permit. Some school units will find it possible to operate complete programs of driving instruction during the summer of 1958; some others will offer complete courses during the regular school year; whereas other units may not find it possible to begin expansion of their program until after the 1958-59 school year. Although the rate of expansion will vary considerably among the respective school administrative units, it is anticipated that the program, on a State-wide basis, will be expanded to the point of being offered to 50% of public school students of beginning driver's age during the first year for which funds are available, 75% during the second year, and 100% during the third year.

### **Number of Students to be Assigned to Classroom and Car**

The number of students assigned to the classroom phase of instruction should not exceed the maximum number of students prescribed by the State Department of Public Instruction for other classroom courses. The number of students normally assigned to the car for instruction at one time should be three persons and should not exceed a maximum of four persons at any time.

### **Instructional Equipment**

As a general rule, one car will be needed for each 130 students enrolled in programs offered in the regular school year and day. For programs offered during the extended school day, one car used for nine months may accommodate as many as 60 students. For summer programs, one used for three months may accommodate as many as 60 students.

As a general rule, one set of psycho-physical test devices should suffice for one large school or for each 130 students enrolled in two or more smaller schools. The instructional program can be varied to permit such devices to be shared by two or more schools.

### **Instructional Materials**

Each student should be provided with one State-approved textbook for his individual use during both the classroom and car phases of instruction. The teacher should be provided with one copy of each of the State-approved textbooks for his individual use. A few additional copies of other approved text-



books, written tests, printed matter and other essential materials listed in the course of study should be provided for teacher and student use.

Textbooks for this course are listed under Health and Safety, Adopted Supplementary Books for High Schools in the catalog of North Carolina Adopted Textbooks, Division of Textbooks, State Board of Education, Raleigh, North Carolina.

### **Evaluation of Instruction**

Driver training and safety education are relatively new courses in the high school curriculum. It is particularly important that school administrators and teachers develop means of measuring and evaluating results of this instruction.

It is also very important that the public be made aware of the purposes and problems involved in driver training and safety education. The administrators and instructors in driver training do not purport to turn out fully trained drivers. When a student successfully completes the driver training course, he should have a solid foundation of attitudes, knowledge and fundamentals upon which to build sound habits and practices. Upon these foundations he should be able to develop proficiency in driving, attitudes of social responsibility, and through experience to develop the confidence and assurance which are necessary for success in the complex traffic scene.

As a guiding principle in determining whether students have satisfactorily completed the driver training course, the teacher may ask himself, "Would I feel safe in riding on the nation's streets and highways with my students as drivers on these same thoroughfares?" The students' attitudes, knowledge and skills should be such that they may safely and efficiently take their places in the American traffic scene.

When the students have satisfactorily completed the driver training course, the teacher should award them course completion certificates furnished by the State Department of Public Instruction. Request copies of the certificate from the Advisor in Safety Education, State Department of Public Instruction, Raleigh, North Carolina. (See list of forms on page 11.)

### **Qualifications of Teachers**

In addition to the general qualifications and duties of teachers and the special requirements listed in Rules and Regulations for Driver Training and Safety Education, driving instructors should have certain special qualifications peculiar to their field.

A teacher of behind-the-wheel phases of driving instruction should be able to observe more things visually and be capable



of doing more things physically than the average driver; therefore, he needs to have very good vision in both eyes and be free of any illness or physical disability which is likely to prevent his proper performance. "Far Visual Acuity" and Field of Vision" are generally considered to be important factors in driving. A job analysis of teaching the behind-the-wheel phase of driving indicates that a person with far visual acuity of less than 20/40 with both eyes or with a field of vision of less than 140° with both eyes may find it very difficult to do a satisfactory job in teaching this phase of the course. Legal and other implications for the teacher and the school indicate that a person who for driver licensing purposes is blind in one eye (20/200 Snellen) *should not under any circumstances be employed for teaching behind-the-wheel phases of driving instruction.*

Some additional special qualifications are:

Interest in possible accomplishments in driver training and safety education, in addition to the actual reduction of accidents.

Interest in teaching driver education as a means of improving the attitudes, knowledge and skills of inexperienced and experienced drivers.

A high degree of patience and a sympathetic attitude needed for working with students in practice driving instruction.

Ability to recognize problems of student drivers and help them work out their difficulties.

A desire to improve instruction through experimentation.

The maturity to command the respect of students.

To make application for certification as an instructor for driver training and safety education, the teacher should request an application blank from the Director, Division of Professional Service, State Department of Public Instruction, Raleigh, North Carolina. One copy of the form should be properly filled in and submitted to the Director, Division of Professional Service. (See list of forms, p. 11.)

Superintendents may obtain a certified driving record of prospective driver education teachers by using Motor Vehicles Form 727, "Operator License Check," prepared by the Department of Motor Vehicles. (See list of forms, p. 11.) Inquiries should be addressed to: Director, Driver License Division, North Carolina Department of Motor Vehicles, Raleigh, North Carolina.

## **Records and Reports**

### **RECORDS**

Each driver education teacher should maintain: (1) a class record of all students assigned to him for driving instruction



(one copy of this record should be submitted to the superintendent and one copy to the principal of the school at which the students are registered); (2) an individual student record of accomplishments in driver education for each student assigned to him for instruction (a copy of this record should be submitted to the principal for filing at the school in which the student is registered); (3) daily and monthly car records which include mechanical inspections, miles driven, purposes for which car is used and expenditures relative to car operation or maintenance (a copy of car record should be submitted to the superintendent at least every four weeks).

Examples of the types of records to be maintained by the driver education teacher are listed on page 11.

## REPORTS

The superintendent should submit reports as required under the Rules and Regulations in sections D-1 and D-2 (page 95) and section E-4(b) (page 97). Forms for use in submitting plan of operation and proposed budget are listed on page 11.

In addition, each school should submit annual reports on its driver education program to the State Department of Public Instruction. A form which is indicative of this type of report is listed on page 11.

The teacher should file with the superintendent an accident report for all accidents in which the driver education car is involved and also should report to traffic authorities any traffic accident for which a report is required by law. Use State Department of Motor Vehicles accident report forms for all accident reports and submit copies to traffic authorities only when the nature of the accident requires it. Copies of the accident report form may be obtained from the local highway patrol office or from the North Carolina Department of Motor Vehicles, Raleigh, North Carolina.

## FORMS

A sample set of the following forms is available from the Advisor in Safety Education, State Department of Public Instruction, Raleigh, North Carolina. The sample set will include suggestions for the use of each form and indicate the source from which a supply of each may be obtained.

Proposed Plan of Operation

Proposed Budget in Support of Proposed Plan

Operator License Check, N. C. Dept. of Motor Vehicles,  
Form 727

Letter re: Teacher Application for Certification  
Car Loan Agreement  
Car Identification with State Program  
Example, Inspection Receipt at Termination of Car Loan  
Example, Car Record Forms  
High School Report to State Department of Public In-  
struction  
Example, Individual Student Record Form  
Example, Class Record of Students  
Example, Required Student Certificate for Satisfactory Com-  
pletion of Approved Course



## Scheduling the Program of Instruction

Rules and Regulations governing this program permit great flexibility in the manner of scheduling instruction. Although scheduling must remain extremely flexible, there are some important questions to be considered in planning for this instruction.

1. *Can students of this maturity level profitably devote more than two (2) hours per day to the classroom phase of driving instruction?* A minimum of thirty (30) clock hours of classroom instruction is required for this course. (See schedule suggestions, page 98.)

In general, school schedules throughout this State and nation indicate the wisdom of restricting classroom instruction to not more than two (2) hours per day for any one subject. Schools planning to offer the classroom phase of this course in such a way that students are enrolled for more than two (2) hours per day should evaluate their programs frequently to determine the degree of their effectiveness.

2. *Can students of this maturity level who are real beginners at driving devote more than one (1) continuous hour per day to car phases of instruction?* A minimum of 6 hours of behind-the-wheel instruction is required for the course; however, students will normally need to devote eighteen (18) hours to small group instruction in the car. Since beginning drivers may reach a learning peak in less than fifteen (15) minutes of continuous behind-the-wheel instruction and practice driving, three (3) students are normally assigned to receive this instruction as a group with time provisions for each to receive six (6) hours of behind-the-wheel instruction and practice driving, plus twelve (12) hours of observation and instruction. This permits the teacher to instruct, demonstrate and then give each of three (3) students the opportunity to practice drive, observe, and receive instruction within the one (1) hour period of time.

In the latter phases of car instruction, some students may be able to devote as much as or more than fifteen (15) continuous minutes to individual behind-the-wheel instruction and practice driving before reaching a learning peak. However, this can be varied within the group of three (3) persons assigned to the car for a particular hour of instruction.

The nature of behind-the-wheel instruction and practice driving indicates that schools planning to enroll a group of three (3)

beginning drivers in this phase of instruction for more than one (1) hour per day should take extreme care in providing adequate time intervals between periods of continuous instruction to assure that students will "progressively learn" rather than simply complete the specified number of hours. Such concentrated behind-the-wheel instruction and practice driving should be carefully evaluated to assure that the student's time is effectively used.

3. *How can classroom and car phases of driving instruction be scheduled for effective teaching?* Theoretically, best results should be obtained by teaching the two (2) phases of instruction concurrently; however, the matters of large group classroom instruction and small group car instruction, under some systems of concurrent scheduling, make it difficult to give each student a sufficient amount of car instruction each week. This is especially true in cases where students are learning with restricted instruction permits which cannot be used except in the school car with the driving instructor. Differences in the ages of students and the problem of obtaining restricted instruction permits or learner's permits further complicate the use of some concurrent schedules.

Another system of scheduling found satisfactory for use in North Carolina provides that students receive instruction in two (2) big blocks of time, each being of sufficient length to provide a good learning situation. This system provides a block of thirty (30) to thirty-six (36) hours for classroom instruction at the rate of one or two hours daily for thirty-six or eighteen consecutive days and a block of eighteen hours for behind-the-wheel instruction and practice driving at the rate of one (1) hour daily for eighteen consecutive days. Under this system, the car instruction may be offered concurrently with classroom instruction or as soon thereafter as practical consideration of student ages will permit. When using this system of scheduling, both classroom and car phases of instruction should be completed within a period of twelve (12) months. Some variations of this plan will make it possible for many students to complete car instruction at the approximate time they reach minimum legal driving age. (See suggested schedule, Plan I, page 99, of the Appendix.) Generally, it is easier to handle the process of obtaining restricted instruction permits or learner's permits under this plan of scheduling in two (2) big blocks of time.

It is recommended that the same teacher be used for teaching both classroom and car instruction for any given group of stu-



dents whenever possible. When impossible to use the same teacher for both phases, it is absolutely necessary that the two phases be carefully coordinated and it is important that the two teachers working with a given group of students have the same background in training. Driving instruction should not be broken down and assigned to teachers in units smaller than the two (2) big blocks of time assigned to classroom and car phases of instruction as indicated in the suggested schedule procedures. In this way, no student would have more than two teachers offering him this course.

4. *Can summer schedules be satisfactorily used in rural school areas or for students who work in summer months?* These students can be accommodated by having the teacher go to the students for car instruction and teach them in the immediate area of their homes. It is rather easy, in most cases, to find three students living near each other. Variations of suggested schedule, Plan V, will perhaps be most useful for such purposes. (See Appendix, p. 99.)

The use of eighteen (18) day blocks of time for summer instruction also permits the schedule to accommodate students at a time which should not interfere with summer vacation plans.

### **Suggested Scheduling Procedures**

In recognition of questions considered in the previous section entitled "Planning the Program of Instruction," schedule descriptions and samples have been prepared to show a variety of adaptations of the basic principles of scheduling this course. Schedule Plans I-VI, appearing on page 99 of the Appendix, describe and illustrate schedules which have been tried in North Carolina schools and have been found to be effective ways of offering driving instruction.

Schedules are suggested; however, local school units may find it desirable to construct their own schedules.

All programs require the superintendent to submit detailed copies of the proposed plan of operation and copies of the proposed budget in support of the proposed plan to the State Superintendent of Public Instruction. (See list of forms on p. 11.)

Those administrative units needing assistance in planning, organizing or operating this program should request such services as may be needed from the Advisor in Safety Education, State Department of Public Instruction, Raleigh, North Carolina.

## Securing Cars for the Program of Instruction

### Selecting, Equipping, Insuring, Operating and Maintaining

Under the Rules and Regulations Governing the Operation of Courses in Driver Training and Safety Education, each course requires the use of an automobile. Some schools may require the use of one or more cars on a full-time basis, whereas in other cases two or more schools or administrative units may share a car. Any vehicle used for driving instruction must be properly licensed, equipped, serviced, stored, insured and identified. Cars obtained for this purpose should be used only for driving instruction and for activities incidental thereto, such as operation to and from the place of storage or maintenance, teacher education workshops, and public demonstrations.

Preferably, cars used for driving instruction should be 4-door vehicles equipped with standard gearshift transmissions. Each vehicle must be properly equipped with dual control mechanisms, an outside rear-view mirror on each side of the car and a heater and defroster in good operating condition. When not in use, the vehicle should be stored or parked at some suitable place which protects the car and prevents the possibility of theft or unauthorized use. The car should be serviced with proper grades and amounts of lubricants, hydraulic fluids, and anti-freeze, as recommended in the manufacturers' specifications, and washed and polished to keep the vehicle in presentable condition at all times. Boards of education should require that vehicles be inspected by a mechanic at least once every four weeks to assure the safe operating condition of the car at all times. The teacher, for his own protection and protection of the school, should make a routine daily inspection to determine the safe operating condition of the car and see that corrections are made as needed. This daily record should also be of value to the mechanic as he performs monthly inspections and maintenance on the vehicle. (See list of record forms, page 11.)

For each car used in driver training, at least the following minimum insurance must be provided:

- \$25,000-\$50,000 bodily injury liability protection
- \$5,000 property damage liability protection
- \$500 medical payments coverage
- \$50 deductible collision coverage
- Comprehensive provisions to cover the value of the car

These minimum insurance requirements not only comply with the financial responsibility law of North Carolina but also provide protection for the owners and operators of the vehicle. The Commissioner of Insurance has approved a special rule whereby



the cost of the first two items is reduced if such vehicles are only used in accordance with the terms and conditions set forth in the special endorsement on such policies. (Additional details concerning the insurance of such vehicles may be obtained from a local insurance agent.) Higher limits of insurance coverage may be obtained for very little additional money. (See law on waiver of governmental immunity, page 91.)

## **Procurement of Automobiles**

Vehicles for use in this program may be obtained by (1) purchasing, (2) borrowing, or (3) leasing.

### **1. *Purchasing***

Boards of education which favor the purchase of an automobile as part of the instructional equipment owned and controlled by the school should place their orders with the State Purchase and Contract Division, Department of Administration, for the type of car which is most suitable for driving instruction. Most schools in the past have used 4-door standard gear-shift cars. The license for a car owned by the board of education will be a P-registration plate as is used on all State-owned vehicles. The frequency of replacement of cars purchased for this program shall be subject to rules and regulations of the State Purchase and Contract Division.

### **2. *Borrowing***

Boards of education may find it possible and desirable to borrow some or all of the cars needed for this program.

When the number of cars needed in an administrative unit has been established, the superintendent with other superintendents of the county should make arrangements to meet with all automobile dealers who sell cars in that county. At such a meeting, each superintendent should describe the proposed program of driver education, specify the number of cars needed, and determine the possibilities for obtaining cars on a free-loan basis. The area chairman for members of the North Carolina Automobile Dealers Association who sell cars in that county should be able to arrange such a meeting.\*

All cars which are borrowed by boards of education will be operated under the terms of approved car loan agreements. (See list of forms on page 11.)

Each car loan requires the negotiation of three copies of the car loan agreement between the lending agency and the appro-

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\* The North Carolina Automobile Dealers Association has an area chairman in almost every county. The name of the area chairman for the dealers serving a county may be obtained from a dealer or by requesting it from the North Carolina Automobile Dealers Association, Raleigh, North Carolina.

priate board of education. One copy is for the lending auto dealer, one copy for the local board of education and one copy for the Advisor in Safety Education, State Department of Public Instruction. The copy of the agreement for the Advisor in Safety Education should be mailed as soon as it has been negotiated so that it may be filed with the proposed plan of operation and proposed budget for that administrative unit.

When borrowed cars are returned at the termination of the car loan agreement, representatives of the lending and borrowing agencies should jointly inspect the vehicle. Following the inspection, the borrower's agent should have the lender sign a statement that the car is in as good condition as when received except for reasonable wear incurred in the driving program. (See list of forms on page 11.)

Cars borrowed from automobile dealers for driver education may use D-license plates or regular plates. (Public license plates may **not** be used on cars unless they are owned by a government agency or subdivision thereof.)

**CAR LOAN AGREEMENTS MUST ASSURE THAT CARS WILL BE AVAILABLE FOR THE ENTIRE PERIOD OF TIME FOR WHICH THEY ARE NEEDED OR CARS ON A LOAN BASIS WILL BE ENTIRELY UNSATISFACTORY.**

### 3. *Leasing*

Some boards of education may prefer to lease driver training cars from automobile agencies. There should be a written agreement between the board of education and the agency from which the car is leased. This contract should specify the agency responsible for insurance, maintenance, repair and any conditions which are to govern the use of the car. The contract would also include statements on the period of time for which the vehicle is leased and the amount to be paid to the leasing agency by the board of education.

Plans for leasing cars should be submitted to the Advisor in Safety Education, State Department of Public Instruction, as soon as the agreement is negotiated so that it may be filed with the proposed plan of operation and supporting budget.

License plates for these cars should be obtained in the name of the owner and at the owner's expense.



# Classroom Instruction

## UNIT I

### HIGHWAY TRANSPORTATION: ITS SOCIAL AND ECONOMIC INFLUENCES UPON THE AMERICAN WAY OF LIFE

Highway transportation is the lifeblood of American Society; moving from farm, industrial, and cultural centers; over asphalt, concrete and macadam arteries; to all parts of the nation. But all parts of the American traffic scene have not received equal amounts of study and development during the years which have had the motor vehicle and highway transportation as influencing factors. Within the past half century, engineers, inventors, and designers have developed the motor vehicle into a sleek streamlined car with a weight of 2,000 or more pounds and almost unlimited power. Similar technicians have developed multiple lane highways, intersections with intricate designs, one-way streets, special parking areas, and many other facilities. All of these improvements, in both vehicles and highways, have been made with the view of making travel by car rapid and safe. The old adage, however, that a "chain is no stronger than its weakest link" is still true. Although much effort has been exerted toward improvement of motor vehicles and highways, improvement of individual drivers has lagged. It may be said that the American traffic scene is represented by modern motor vehicles, modern highways and streets, and too many drivers of the "roaring twenties" era. This unbalanced situation is the cause of many of the accidents which occur daily on the public highways.

Since traffic accidents are primarily the results of driver inefficiencies, the driver logically becomes the key to the solution of traffic problems. Physically and mentally, the **young** driver should rate among the best in the nation. However, his tendency towards inefficient driving makes driver education a necessity for present-day society. Young drivers who have had the opportunity to learn and practice in formal driver education courses have an excellent opportunity to develop into highly proficient drivers.

Students, who are taking driver education, will assume social and economic responsibilities and privileges which are being continually changed by the motor vehicle. In order to enjoy the privileges extended to the American way of life, students, as citizens of this nation, must understand and assume the obliga-

tions placed upon individuals and groups by highway transportation. As the students study the facts in this unit, they will become more familiar with the influences of automobiles on the American society.

### *Objectives:*

- To create an understanding of the social and economic influences of the motor vehicle.
- To bring about an awareness of the problems and responsibilities which highway transportation presents to the American public on national, State and local levels, and to suggest activities which may be effective in solving these problems.
- To suggest activities which may be effective in making pedestrian and vehicular traffic flow more efficiently.

### **Content**

Every invention in any society has its advantages and disadvantages. If the favorable points outnumber the unfavorable points, the invention can be of value to the society in which it is introduced. Students in driver education classes may study the desirable and undesirable influences of highway transportation. Once the students have acquired this information, they may decide whether the advantages of the motor vehicle outweigh the disadvantages.

#### *I. Social and economic influences of the motor vehicle.*

- A. Highway transportation has a major influence on the economics of modern civilization.
  1. The automobile has become a necessity of life, along with food, shelter and clothing.
  2. With the development of the motor vehicle, the standard of living has been raised in the United States.
  3. Highway transportation has brought the farm and factory, producer and consumer closer together.
  4. The motor vehicle has directly or indirectly provided a job for about one worker out of every seven.
  5. Highway transportation has made it possible for many workers to live in uncrowded communities.
  6. The wonders of the world have been brought within easy reach of many people.



- B. Highway transportation has a major influence on the social aspects of modern society.
  - 1. Many of the so-called insurmountable barriers between rural and urban residents have been removed.
    - a. The nation is more unified.
    - b. Citizens have a better understanding of the customs, problems and activities of people throughout the nation.
    - c. Highway transportation has enabled more people to participate in governmental activities.
    - d. Rural living has expanded.
  - 2. Citizens may enjoy the social activities of rural and urban areas.

## II. *Possible undesirable influences of the automobile.*

- A. Have many families in low income groups been deprived of the necessities because too much of the family income has been used for transportation?
- B. Has loss of life, physical suffering and economic losses resulting from traffic accidents increased?
- C. Has increased mobility provided by the motor vehicle tended to expand criminal activity?
- D. Have outside interests unduly decreased the unity of family living?
- E. Has the increased tempo of modern living resulted in harm to both health and social standards of the citizens of the United States?

## III. *Introduction of the traffic problem.*

- A. Accidents have major significance.
  - 1. Review national accident figures.
  - 2. Review State accident figures.
  - 3. Review local accident figures.
  - 4. The problem of traffic accidents has special significance for drivers under twenty-five years of age.
    - a. Young drivers should be among the best drivers.
    - b. Young drivers have a disproportionate share of fatal accidents. Traffic accidents are the chief cause of death among members of the 4-24 age group.

- B. Accidents are caused events.
  - 1. Approximately 85 per cent are due to driver faults or errors.
  - 2. Approximately 12 per cent are due to faulty mechanical apparatus and faulty roadways.
  - 3. Approximately 3 per cent are due to causes beyond the control of man.

IV. *Suggested approaches to the solution of the problems presented by highway transportation.*

- A. The role which education has played in improvement of highway safety is being felt by many.
- B. Engineering has contributed to the improvement of the accident situation.
- C. Improvement through enforcement is being felt both subjectively and objectively.
- D. Compare the possible contributions by education, enforcement and engineering, showing the interrelationship of each to the other.
- E. Stress the importance of legislation as a measure of the effectiveness of each approach.

V. *Acts which can contribute to improvement of the traffic accident situation.*

- A. Give the best available instruction in order to make beginning drivers good drivers and experienced drivers more competent.
- B. Adjust driving to road and traffic conditions at all times.
- C. Reduce driving speed when driving under adverse conditions.
- D. Drive according to the capabilities of the driver, the mechanical condition of the vehicle, and driving conditions of the roadway—at the same time giving necessary consideration to the limitations and capabilities of other highway users.
- E. Remember that alcohol slows reaction time and dulls the senses. “If you drink and drive, drink milk and stay alive!”
- F. Keep other drivers informed of change in direction



by using correct hand signals, directional signals and "car position" signals.

- G. Keep safe distances between car being driven and the vehicle in front.
- H. Reduce speed when visibility is limited.
- I. Keep personal automobile in safe operating condition and make an effort to see that others do likewise.
- J. Obey signs, signals, and traffic markings as aids to the driver.
- K. Be a defensive driver.
- L. Practice courtesy.
- M. Always be alert.

### Suggested Activities

- I. Discuss the statement: "All young drivers are poor drivers."
- II. Students may discuss advantages and disadvantages of the motor vehicle.
  - A. Discuss the advantages offered to your community by the motor vehicle.
  - B. Discuss the liabilities presented by the motor vehicle in your community.
- III. Students may visit the local recorder's court and report on traffic violation cases involving moving traffic.
- IV. Discuss the effects of an accident. The student may discuss the degree to which the accident affected the motorists, their families, their businesses, and their friends.
- V. Students may make maps of their communities, counties, or cities, spotting the places at which accidents occur. After they have spotted the places at which several accidents have occurred, they may make studies of factors involved and report their suggestions to proper local technicians. These suggestions would be opinions of lay-people, not technicians, and should not be interpreted as cure-alls developed by experts.
- VI. Students may discuss the parts which legislation, education, engineering and enforcement play in the reduction of accidents.

## REFERENCES

- Highway Safety and Driver Education*. Chapters I-III.  
*Let's Drive Right*. Chapters 24-29.  
*Man and the Motor Car* (Fourth Edition). Chapters I-II.  
*Man and the Motor Car* (Fifth Edition). Unit I: Problems 1-3.  
*Sportsmanlike Driving* (Second Edition). Chapters I, X, XXII, XIV.  
*Sportsmanlike Driving* (Third Edition). Chapters 1, 13, 22-24.  
*The Road to Better Driving*. Introduction, Units I, IV, IX.  
*Traffic Law and Highway Safety*. Introduction, Chapter XX.  
*Youth at the Wheel*. Chapter I.

## FILMS

- Anyone at All* (16mm. sm. 22 min.). Shows that a serious accident can happen to anyone. It dramatizes accidents which occur on the highway, in the home, and in the factory.  
*In the Driver's Seat* (16mm. sm. 18 min.). Solutions to many traffic problems. Shows that teen-agers, who have a disproportionate share of accidents, can be helped to become safe and sportsmanlike drivers.  
*Teach Them to Drive* (16mm. sm. 20 min.). Carries urgent message to parents and schools to teach our young people to drive. Shows driver training methods now in use in high schools, and the daily dividend in safety which is a result of this training.  
*Tomorrow's Drivers* (16mm. sm. 10 min.). Shows the benefits obtained from such a course and the good drivers it makes.

## UNIT II

### PHYSICAL AND MENTAL CHARACTERISTICS OF THE DRIVER

When a person enters the complex traffic scene of today, he needs to be mentally alert, physically fit, thoroughly familiar with rules and regulations concerning efficient highway transportation, and willing to share traffic ways courteously. The driver's license gives a person the privilege of driving on the nation's highways; however, that same license also gives him the responsibility of sharing this privilege with other highway users. If a motorist is a good driver, he will always drive defensively, with the knowledge that many highway users have limitations, disabilities and/or other inadequacies. All drivers should remember that their driving must fit into the teamwork of the traffic scene.

Most of the nation's accidents are precipitated by unsafe practices or acts of drivers. Accident investigations seldom, if ever, reveal that an accident results from a single causal factor. They frequently disclose, entwined in the personality of the driver, a number of underlying causes or conditions which ultimately lead to accidents. These contributory causes—improper attitudes, lack



of skill, lack of knowledge, failure to follow safe practices, and psycho-physical deficiencies—culminate in the unsafe acts of the driver.

Quite frequently poor attitudes can be improved by education and strict enforcement. Lack of particular skills can be located and improved through instruction and practice. The driver may obtain knowledge by attending driver education classes; reading newspapers, pamphlets and books; listening to the radio; viewing television programs, films and film strips; and adopting the exemplary behavior of good drivers. Psycho-physical deficiencies may be located by using appropriate testing (screening) devices, and proper action may be taken to adjust correctable and compensable disabilities.

Students frequently get exaggerated impressions of their physical capacities in handling automobiles. In studying this unit, they become familiar with the fact that in the hands of a physically fit, emotionally mature and socially responsible driver, an automobile is useful and enjoyable.

#### *Objectives:*

- To encourage mental and physical alertness among all prospective drivers.
- To acquaint students with undesirable mental and physical qualities.
- To bring about a realization that attitudes, habits and emotional reactions affect driving efficiency.
- To provide students with a knowledge of correctable and compensable disabilities, and of the proper action to take in dealing with those deficiencies which affect safe and skillful driving.
- To stimulate interest in driver testing and to develop an appreciation for the psycho-physical traits and differences among drivers.
- To develop among the students an awareness of psycho-physical limitations, their effect upon safe driving, and the best means of dealing with the respective limitations.

#### **Content**

Every driver must be able to evaluate and understand his psychological deficiencies and compensate for them. In addition to understanding his abilities and limitations, the driver education student must drive defensively—understanding and compensating for other persons in America's complex traffic scene. A driver education student has the opportunity of studying all

types of qualifications of drivers and all types of disabilities which limit driving abilities. In studying this course, the student learns the importance of coordination of the mind, body and eyes in driving.

I. *Physical qualifications of the driver.*

- A. He should have sufficient strength to operate the automobile.
- B. He should be free of temporary disabilities.
- C. He should have satisfactory visual ability.
- D. He should be alert at all times.
- E. He should have the best hearing possible.
- F. He should be aware of his reaction time, whether it's average, slower than average, or faster than average, so that he may compensate for deviations. *Example:* Follow at a greater distance if reaction time is slower than average. Do not apply brakes too quickly and thus put the driver following you in a tight spot if your reaction time is faster than average.

II. *Dangerous driving personalities.*

- A. The **egotist** acts as though he is the most important person in the world.
  - 1. He thinks that traffic lights, traffic signs and signals and regulations were made for other drivers who in "his" opinion do not drive quite so well as he does.
  - 2. Other drivers must be cautious when he is on the highway because he may force them out of his path or perform other dangerous acts to convince them of his importance.
  - 3. In general, he thinks that the entire world should and does revolve around him. He is self-centered, doesn't care what happens to others and is not willing to recognize the privileges of other highway users.
- B. The **emotionally immature** driver uses his car to gain a feeling of power and recognition.
  - 1. This driver may try to impress his passengers or audience by playing any one of a variety of acts to focus attention upon himself. Some of the more serious of these acts are games known as "chick-



en," taking corners on two wheels, "digging off," coming to a "screeching woe," and speeding.

2. There is a great deal of similarity between this type of driver and the little boy who by standing on his hands tries to impress a little girl. However, the little fellow does not fall as fast, as far, hit as hard, or endanger the lives of others as does the show-off in the driver's seat.
- C. The **irresponsible** driver is satisfied with just "getting by" on the road. Because it requires a great deal of immediate effort to give a hand signal, reduce speed in fixed or special speed zones, or grant the right-of-way to others, this type of driver sees no reason to obey traffic regulations.
- D. The **temperamental** driver is easily annoyed by actions of other drivers. He may blow his horn when the driver in front of him does not dash ahead at the first flicker of green on the signal light. At times, the temperamental driver may try to "get even" with drivers who have caused him delay or inconvenience.
- E. The **inattentive** driver may be absorbed in the crops growing alongside the highway or other interesting scenes. He may be concerned with personal problems, sorrow, or happiness.

### III. *Compensable disabilities.*

- A. Drivers who are deaf may compensate for this disability by use of amplifying aids, by greater dependence on vision, or by being more alert.
- B. Some persons having paraplegia may obtain custom-built cars which will suit their needs and enable them to meet satisfactory standards in driving performance.
- C. Some amputees may also obtain custom-built mechanical devices which will enable them to meet satisfactory standards in driving performance.
- D. In many cases, impaired vision may be corrected by glasses or other prescriptions by an eye specialist.

### IV. *Non-compensable disabilities.*

- A. A person subject to lapses of consciousness should not be allowed to drive. *Example:* No operator's

license shall be issued to any applicant who has been previously adjudged grand mal epileptic (N. C. Law).

- B. An insane person is not competent to operate a motor vehicle with safety to persons and property, and therefore should be eliminated as a menace on the highways.
- C. In complex forms, paralysis results in loss of muscular control and renders safe driving impossible. The licensing authority has responsibility for determining which paralytics possess sufficient muscular control to qualify for a license.
- D. Any person who is subject to sudden collapse as a result of a serious heart disorder is a poor risk on our highways and should of his own volition refuse to drive.

#### V. *Temporary disabilities.*

- A. The use of any drug or chemical which seriously impairs the driver's alertness and efficiency temporarily disables the driver. *Example:* Alcohol, narcotic drugs, etc.
- B. Carbon monoxide, which is produced by the incomplete combustion of gasoline, is a tasteless, colorless, and odorless gas found in the exhaust gases of all automobiles.
  - 1. This gas can be deadly and the driver should exercise every precaution in keeping it out of the interior of the car.
  - 2. Never run the engine to keep warm when the car is not moving.
  - 3. Be sure the garage door is open when starting the automobile engine in a garage.
- C. Fatigue and sleepiness lead to driver inattentiveness.
- D. Fear, anger, worry, and impatience can cause the driver's performance to be under par. One should not drive when under the influence of these or other emotional disturbances, but if he does drive, he should exercise extreme caution to compensate for these factors.

#### VI. *Age—a determining factor.*

- A. As drivers grow older, they need to be aware of



physical changes which may cause lengthened reaction time and impaired vision or hearing.

- B. Comprehension of driving situations may change with age and experience.
- C. In North Carolina, a person must be 16 years of age before he may apply for a driver's license. This legal age for driving varies among the 48 states. A driver education student may get a special learner's permit (prior to his 16th birthday) to be used while in a driver education car with a driver education teacher.
- D. The group of drivers under twenty-five years of age has a disproportionate share of fatal accidents.

## VII. *The eyes of the driver.*

- A. Visual acuity, which is the ability to see details, is very important in driving.
  - 1. The *Snellen Eye Chart* is used in many classrooms to determine a person's general visual acuity.
  - 2. North Carolina license examiners use orthoraters which are much more accurate than the Snellen Chart.
  - 3. If a person has limited visual acuity, he should see an eye specialist for a comprehensive eye examination and get corrections as prescribed.
- B. Vision to each side while looking straight ahead is very important to the driver.
  - 1. This is called field of vision, or peripheral vision, and it may be checked by a field of vision testing device.
  - 2. If a person's field of vision is quite limited, he may compensate for it by reducing speed in heavily traveled areas, and in scanning continually the horizon by turning his head to the right and then to the left when driving in general and at intersections in particular.
- C. When driving at night, it is important that the driver not be blinded by the glare of headlights.
  - 1. Glare recovery may be checked by a glare resistance test device.
  - 2. To avoid being blinded by the headlights of oncoming cars, the driver may look to the right edge of the roadway as a guide.

- D. Depth perception becomes very important in the driving scene when drivers follow other cars, pass other cars, park in small spaces, or drive in tight places.
  - 1. Depth perception, or distance judgment, may be checked by depth perception testing device.
  - 2. One may compensate for deficiencies in distance judgment by following other cars at greater distances and by keeping out of tight spots.
- E. Braking reaction time is very important in driving and for purposes of discussion may be divided into two types: simple reaction time and complex reaction time.
  - 1. *Simple reaction time* constitutes a person's reaction to a stimulus. *Example:* In using the reaction time testing device, a person is told to move his foot from the accelerator pedal to the brake pedal when he sees a red light.
    - a. Although the actual driving situation is more complex than the above test situation, a person taking the test may get an idea about his reaction time.
    - b. In a group testing situation, a person may learn about his reaction as it compares with the reaction time of other individuals and the average for the group.
  - 2. *Complex reaction time* consists of the driver's following reactions: Seeing the situation, understanding the problem, determining appropriate action and beginning the action necessary to avoid hitting someone and to control the car. The amount of time required for a person to react will be appreciably lengthened by fatigue, alcohol, barbiturates, distractions and drowsiness.
- F. A person's hearing may be checked by an audiometer or a whispering test.

### Suggested Activities

- I. Students may cut out pictorial and written accounts of traffic accidents; name the series of events which may have led up to each accident; and discuss ways by which the motorists may have prevented each accident.
- II. Have students observe how well drivers obey signs and signals, and make recommendations for possible methods of improvement.



- III. What are the students attitudes regarding the safe use of the highways? Use Siebrecht's attitude scale to judge.
- IV. A student committee may prepare a simple rating chart which they can use in determining driver errors.
- V. Students may observe driving errors in parking, in passing, in entering intersections, and other practices; and discuss these errors in class. Attitudes would necessarily be brought into a discussion of this type.
- VI. Students may make a report of violations of safe-driving practices which can be attributed to poor mental and physical qualifications with suggestions for improving such practices.
- VII. Class members may discuss ways in which attitudes may be improved.
- VIII. Students may discuss noncompensable disabilities and determine reasons which keep persons with these disabilities from driving safely.

#### REFERENCES

*Highway Safety and Driver Education.* Chapter V.  
*Let's Drive Right.* Chapter II.  
*Man and the Motor Car* (Fourth Edition). Chapters III, IV.  
*Man and the Motor Car* (Fifth Edition). Unit III: Problems 1, 2.  
*Sportsmanlike Driving* (Second Edition). Chapters III-V, VII.  
*Sportsmanlike Driving* (Third Edition). Chapters 2-4.  
*The Road to Better Driving.* Unit I.  
*Traffic Law and Highway Safety.* Chapter XII.  
*Youth At The Wheel.* Chapters II and VI.

#### FILMS

*Driven to Kill* (16mm. sm. 9.5 min.). Deals with general subject of traffic safety, with emphasis on proper driver attitudes.  
*Day in Court* (16mm. sm. 29 min.). Shows five typical offenders, nice people in other ways but menaces to society when behind the wheel; learning courteous driving.  
*Motor Mania* (16mm. sm. 7 min.). Walt Disney color cartoon that reveals how wrong attitude on the part of a motorist can make him act like a maniac when he is behind the wheel.  
*Turn About Man* (16mm.sm. 10 min.). Amusing portrayal of poor manners on the highway. Shows why bad manners in driving are not only just as out of place as in society, but are much more dangerous.

#### UNIT III

### THE AUTOMOBILE: ITS CONSTRUCTION, OPERATION, AND MAINTENANCE

Before a pilot flies an airplane, he must become well versed in the meaning of all the gauges and instruments used in flying.

Prior to each flight, he must check these indicators to assure that the plane is in proper operating condition. The pilot and plane maintenance personnel must also check the entire airplane at frequent intervals and make repairs, if needed, to assure its air worthiness and efficient operation at all times.

In addition to the checks on the airplane, the pilot must have physical and mental examinations by medical doctors at frequent intervals to assure that he, too, is in condition to function efficiently. Also, at frequent intervals, the pilot is tested to determine his ability to check and operate the type of plane or planes which he has been trained to fly.

This system of checking, servicing, testing, and medical examining serves as a means of providing efficient operation of the plane by its pilot. The efficiency with which each of these functions is carried out determines whether the plane and pilot will fly; it may determine whether the pilot lives or dies.

A similar system of checking, servicing, testing, and medical examining is equally important to efficient performance by the automobile and its driver. Knowledge of the automobile could serve as a sound foundation upon which desirable attitudes, driving skills, and habits may be built.

This unit, which may be taught without moving the car, will help familiarize the student with the various parts of the car. During this instruction, as always, the teacher should use language which can be understood by the students.

### *Objectives:*

- To develop an understanding of those principles of automobile construction and operation necessary for safe and efficient driving.
- To help students acquire a sense of responsibility for maintaining a car according to approved methods and specifications for economy and safety.
- To develop an understanding of the relationship between the mechanical condition of the car and car control.

### **Content**

Each automobile has a number of units which work together in harmony to make up the means of conveyance. These units are held together firmly to make the automobile work as a complete unit and to control vibrations.

To begin with the foundation, the student should become familiar with the chassis and the assemblies which are attached to it. The teacher, by use of charts or a cut-a-way car, may help



the students learn the locations of the chassis and body parts, their special functions, and the functional relations of each to the other.

I. *Important parts of an automobile.*

- A. The students will find it satisfying and valuable to be able to identify and understand the functions of the following parts of the car:
  - 1. The chassis frame as the skeleton of the car.
  - 2. The springs, wheels, and axles as the assemblies which are attached to the frame and support the frame and body.
  - 3. The brakes as a force which stops or impedes the movement of the car.
    - a. Mechanical brakes
    - b. Hydraulic brakes
    - c. Air brakes
  - 4. The clutch, transmission gears, driveshaft, universal joints, differential gears, and rear axles as parts which transfer power from the engine to the wheels.
  - 5. The gasoline tank as a storage place for fuel.
  - 6. The steering system used in maneuvering the car.
- B. Before he starts a detailed study of the car parts and systems, the student may be interested in locating the following parts under the hood:
  - 1. Engine block, crankcase, and cylinder head(s).
  - 2. Crankcase air vents.
  - 3. Intake and dip stick for engine oil.
  - 4. Intake and dip stick for automatic transmission oil.
  - 5. External filter for engine oil.
  - 6. Air filter, carburetor, and fuel pump.
  - 7. Battery.
  - 8. Generator and belt drive.
  - 9. Voltage regulator.
  - 10. Starter.
  - 11. Distributor.
  - 12. Spark plugs.
  - 13. Fan and belt drive.
  - 14. Radiator.

15. Thermostat.
16. Water pump.

C. There are gauges on the instrument panel to indicate the supply and/or condition of gasoline, air, water, oil, electricity, speed or mileage. These gauges may vary on different makes of cars; therefore, the student should be able to locate and understand the readings of the following gauges on all makes of cars:

1. Gasoline.
2. Ammeter or other indicator.
3. Temperature.
4. Oil pressure.
5. Speedometer.
6. Odometer.

D. The student should be able to locate and understand the operation of the following safety aids:

1. Light switches.
  - a. Headlights (all beams)
  - b. Parking lights
  - c. Tail lights
  - d. Brake lights
  - e. Turn indicators
  - f. Back-up lights
  - g. Instrument panel lights
2. Rear-view mirrors.
3. Windshield wipers.
4. Horn ring or button.
5. Sun visors.

E. The student should know the locations and functions of the starting devices which may include all the following:

1. Ignition switch.
2. Starter switch.
3. Choke.
  - a. Manual choke
  - b. Automatic choke
4. Throttle.

F. After having discussed some of the parts of the car, the teacher may want to discuss the functions of the car systems with the students.



1. Discuss with students the operation of the engine and the engine lubricating system:
  - a. How power is produced in the combustion chamber.
  - b. How power is transferred from combustion chamber to the flywheel.
  - c. Timing system used to assure that the air-fuel mixture and the ignition spark reach the combustion chamber at the right time for the piston and the crankshaft to receive the exploding fuel.
  - d. Engine's main systems for internal distribution of oil from the crankcase—splash system and/or pressure system.
  - e. Engine parts requiring special lubrication—starter, generator, distributor, etc.
2. Discuss with students the operation of the ignition system:
  - a. Battery
  - b. Ignition switch
  - c. Ignition coil
  - d. Distributor
  - e. Spark plugs
  - f. Starter
  - g. Generator
  - h. Ammeter
  - i. Voltage regulator
3. Discuss with students the functions of the parts of the fuel system:
  - a. Gas tank
  - b. Fuel line
  - c. Fuel pump
  - d. Carburetor
  - e. Intake manifold
  - f. Intake valves
4. Discuss with students the manner in which the engine is cooled.
  - a. Water
    - (1) Radiator
    - (2) Water pump
    - (3) Thermostat
  - b. Air
    - (1) Radiator

- (2) Fan
- (3) Crankcase ventilator
- 5. Discuss with students the operation of exhaust systems:
  - a. Exhaust valves
  - b. Exhaust manifold(s)
  - c. Exhaust pipe(s)
  - d. Muffler(s)
  - e. Tail pipe(s)
- 6. Discuss with students the parts and functions of the steering system:
  - a. Steering wheel
  - b. Steering column
  - c. Shaft
  - d. Steering gear
  - e. Intricate connections of rods and arms, through ball and socket or other joints:
    - (1) Pitman arm
    - (2) Steering connecting rod
    - (3) Steering idler arm
    - (4) Steering tie rods and tie rod ends
    - (5) Spindle steering arm
- 7. Discuss with students the various types and parts of the braking systems:
  - a. Mechanical brakes (service brakes and/or parking brakes):
    - (1) Brake lever
    - (2) Brake pedal
    - (3) Brake rods and/or cables
    - (4) Brake shoes
    - (5) Brake drums
  - b. Hydraulic brakes:
    - (1) Hydraulic brake pedal
    - (2) Master cylinder
    - (3) Brake lines (or tubes) and hose connections
    - (4) Wheel cylinders
  - c. Heavy duty brakes:
    - (1) Air brakes
    - (2) Vacuum brakes
    - (3) Electrical brakes
    - (4) Power brakes
- 8. Discuss the lighting system.



## II. *Care and maintenance of an automobile.*

- A. Lubrication of the moving parts of an automobile reduces friction and adds to the comfort and pleasure of the driver.
  - 1. Motor oil acts as the chief lubricant for the engine.
    - a. It should be changed according to the factory recommendations.
    - b. This oil should be kept clean at all times.
    - c. If the engine uses an excessive amount of oil or if excessive leakage is observed, a competent person should check the cause and make repairs as needed.
  - 2. The chassis assembly should be lubricated regularly. Since it is exposed to many types of abrasive and corrosive substances, it should be thoroughly cleaned prior to being lubricated.
  - 3. When the chassis assembly is lubricated, the oil level in the transmission housing and rear axle housing should be checked and serviced as needed.
- B. When the engine is operating, the explosions can produce heat capable of melting the engine. In view of this potential heat, the coolants must be operating properly to carry excess heat away.
  - 1. The water in the cooling system should be clean.
  - 2. It should circulate properly throughout the entire system.
  - 3. The water level should be near the top of the overflow pipe in the radiator at all times.
  - 4. As the seasons change, the automobile owner should have his cooling system, including the thermostat, checked thoroughly. (Add anti-freeze when needed.)
  - 5. Drive belts for the water pump and fan must be in good condition and kept under proper tension for efficient cooling.
- C. The ignition system should be kept in tiptop condition to facilitate good performance and economy of operation.
  - 1. The battery should be clean and free of corrosion.
  - 2. Exorbitant charges or discharges may severely damage the battery.

3. The water in the battery should cover the battery plates.
    - a. If water is low, add distilled water.
    - b. Specific gravity should be checked occasionally.
  4. Spark plug performance should be checked approximately every 10,000 miles and corrections made as needed.
  5. Distributor points should be adjusted and the timing reset about twice a year. (The distributor requires special lubrication.)
- D. The power which is produced by the explosion in the engine cylinders is transferred to the wheels through the power train. The parts which make up the power train are very important and should be properly maintained. All cars must have some means of disconnecting the power train from the engine to the rear wheels so that the engine can run while the car is not moving. For cars equipped with manually operated gearshift transmissions, the power train is disconnected by means of a manually operated disk clutch. In cars with automatic or semi-automatic transmissions, this function is automatically accomplished by slippage in a fluid coupling.
1. All parts of the manually operated disk clutch assembly must be in good condition, properly adjusted and lubricated regularly for efficient clutch operation. The conditions listed below indicate improper clutch performance for which the causes should be determined and corrections made as needed.
    - a. The clutch slips when engaged.
    - b. The clutch chatters or grabs when being engaged.
    - c. The clutch spins or drags when disengaged.
    - d. The clutch produces unusual noises.
    - e. The clutch pedal pulsates as slight pressure is applied to it while the engine is running.
    - f. The clutch pedal does not have sufficient free play. In most cars, the free play approximates 1 inch; however, this varies among different makes of cars and one should follow the manufacturer's recommendation.
  2. The transmission allows the engine and rear



wheels to rotate at differing speed ratios. Its gears, parts and the gear shifting mechanisms, whether operated manually or automatically, must be in good condition, properly adjusted and adequately lubricated to operate efficiently. The lubricant level in the transmission case(s) should be checked each time the chassis assembly is lubricated and lubricant added as needed. The external shifting mechanism for the transmission should be lubricated each time the chassis assembly is lubricated. Some transmissions are water cooled; however, most are air cooled and the outside of the transmission case as well as the crankcase should not become heavily coated with grease, mud, or grime. The conditions listed below indicate improper transmission performance for which the cause(s) should be determined and corrections made as needed:

- a. The transmission makes abnormal noises such as: hissing, growling, humming, whining, whistling, buzzing, clicking, squealing, screeching, chattering or clunking.
  - b. The transmission does not shift properly, will not stay in the gear or the driving range into which it has shifted or it locks in the gear or in the driving range into which it has been shifted.
  - c. The automatic transmission slips excessively when engaged in any of the driving ranges or causes the car to creep excessively.
  - d. There is extensive leakage of oil from the transmission case(s).
3. The universal and slip joints which allow the driveshaft to adapt to varying angles at which power must be transmitted from the transmission to differential gears, as the car springs up and down must be in good condition, properly adjusted and adequately lubricated to function efficiently. The following conditions indicate improper performance for which the cause should be determined and corrections made as needed:
- a. A metallic clash or backlash in the universal joint(s) when the car is being set in motion or when pressure is suddenly released on the accelerator.

- b. The universal joint(s) makes unusual noises—excessive humming or metallic grating sounds.
  - 4. The differential gears, which change the direction of power and permit each of the rear axles to turn at differing speeds, to compensate for differences in distances the rear wheels travel when the car rounds a turn, must be in good condition, properly adjusted and adequately lubricated to function efficiently. The following conditions may indicate improper performance by the differential gears for which the cause(s) should be determined and corrections made as needed:
    - a. Excessive humming noises in the differential gears which gradually turn to growling noises.
    - b. Metallic grating sounds as though metal fragments are being caught between the meshing differential gears.
  - 5. The rear axles and axle assemblies which transfer power from the differential gears to the rear wheels must be in good condition, properly adjusted and adequately lubricated to function efficiently. The following conditions indicate improper performance for which the cause(s) should be determined and corrections made as needed:
    - a. An axle bearing produces the screeching noise of metal grating on metal.
    - b. When a rear wheel and axle do not turn in a normally free manner and it has been determined that it is not the result of dragging brakes.
- E. The efficiency of the steering system is very important in the control of a motor vehicle. It enables the driver to direct the moving vehicle efficiently and absorbs most of the road shocks which tend to change the vehicle from the path along which it is directed. Through mechanical advantage (and optional power steering) it multiplies the effort applied by the driver in steering the vehicle. The steering system must be in good condition, properly adjusted and adequately lubricated, to perform efficiently. Since the driver's life is dependent upon the efficient operation of the steering system, he should learn how to check its parts so that he may personally check them at frequent intervals. Since steering difficulties may result



from tire, wheel, spring, shock absorber or frame troubles, as well as from causes within the steering system, a competent person is required to determine the cause and make necessary corrections. The following conditions indicate improper performance of the steering system for which the cause(s) should be determined and corrections made as needed:

1. Excessive play or looseness in the steering system and/or front wheel suspension system.
  2. The steering wheel becomes unusually hard to turn.
  3. The vehicle wanders, causing difficulty in keeping the car moving straight ahead, and requires frequent movements of the steering wheel to prevent wandering from side to side of the traffic lane.
  4. The vehicle persistently pulls to one side so that almost constant pressure in the opposite direction may need to be applied to the steering wheel in keeping the vehicle moving straight ahead.
  5. The front wheels of the vehicle shimmy and produce a rapid shaking or vibration of the front wheels and the front end of the car.
  6. The steering becomes erratic when the brakes are applied, causing the car to pull to one side when it should continue traveling straight ahead.
  7. If there is excessive shock or kickback of the steering wheel when the front wheels strike obstructions in the roadway.
  8. The front or rear wheels tramp. An up and down movement with the right wheel moving upward as the left wheel moves downward, and vice-versa. This tramping may occur with one front and one rear wheel on opposite sides of the car, with the two front wheels, or with the two rear wheels.
  9. Improper tire wear may indicate some defect in the steering system.
- F. The efficiency of the braking system, like the steering system, is very important in the control of a motor vehicle. Brakes enable the driver to slow or stop the moving vehicle by converting the energy of motion into heat by means of friction. The braking effort applied by the driver is multiplied by one or more of the following means: mechanical levers,

hydraulic pressure, vacuum pressure, air pressure or pressure by electromagnetic force. The component parts of the service and auxiliary braking systems must be in good condition, properly adjusted, adequately lubricated and adequately filled with such fluids as may be required if they are to operate efficiently. Since the driver's life is dependent upon the efficient operation of the braking system, he should learn how to check the system so that he may personally check it at frequent intervals. Since braking difficulties may result from many causes, a competent person is required to determine the cause(s) and make necessary corrections. The following conditions indicate improper performance of the braking system for which the cause(s) should be determined and corrections made as needed:

1. When the vehicle does not have adequate brake pedal reserve as revealed by driver's observations before and during travel.
  2. When a driver's check of braking performance during the first fifty feet of vehicle travel reveals improper braking performance.
  3. When the brake pedal action is soft or spongy.
  4. When the brake shoes at one or more wheels drag at times when the driver is not applying the brakes.
  5. If the car pulls to one side when the driver applies the brakes.
  6. If brakes are too sensitive and grab when slight pressure is applied to the brake pedal.
  7. When excessive brake pedal pressure is required and the effort produces poor braking results.
  8. If brakes produce a screeching noise of metal grating on metal when the brakes are applied.
  9. If fluid leaks occur in the feeder lines, wheel cylinder or master cylinder of hydraulic braking system.
  10. If an air leak occurs or is likely to occur in air lines or pressure cylinders of vacuum or air brakes.
  11. When electrical failure occurs in any part of an electrical braking system.
- G. Care of the tires can mean economy, riding comfort and maximum safety.



1. One of the most common causes of excessive tire wear is improper inflation.
  - a. If the tire is five pounds under correct pressure, life of the tire may be reduced by about one-third.
  - b. Tire life may be cut by about one-half if tire is nine pounds under inflated.
  - c. Internal heat, caused by the constant flexing action in under inflated tires, precipitates deterioration of both the rubber and the fabric of tires.
  - d. Under inflated tires cause wasted gas because more power is needed to move the car.
  - e. Changes in the temperature may change the pressure required in tires.
    - (1) A sharp drop in temperature may cause tires to need more air, since air contracts when cold.
    - (2) Excessive heat may cause tires to need less air, since hot air expands.
  - f. Under inflation may cause excessive wear on both outer edges of a tire tread.
  - g. Over inflation may cause the tires to wear excessively in the middle of the tread.
2. "Digging off" and "taking corners on two wheels" is not only dangerous, but also scuffs and burns the tire rubber and places undue strain on the fabric.
3. Scraping or bumping curbs or other obstructions may weaken or cause breaks in the side walls, thereby increasing the possibility of blow-outs, and short tire life.
4. Misalignment of wheels causes the tire to drag sideways instead of rolling along freely, and is one of the greatest enemies of long tire life.
  - a. Signs of uneven or feather edge wear may indicate that alignment should be checked.
  - b. Alignment of wheels should be checked after having made forceful contact with curbs, embankments, holes in roadway or other obstructions which severely jolt the wheel and suspension system.
5. Incorrectly balanced or sprung wheels may cause excessive tire wear.

6. To add to the mileage and life of automobile tires, a driver may take many precautions:
  - a. Check tire pressure frequently to maintain pressures recommended by the manufacturer.
  - b. Avoid sharp impacts, curbs, deep chuck holes and other obstructions.
  - c. Rotate tires at 5,000 miles, using all five tires, so that each tire will be subjected to the same amount and rate of wear.
  - d. Since valve caps protect against dust or grime and guard against loss of air through leaky valves, keep them on all valves.
  - e. Wheel alignment and brake adjustment should be checked about every 5,000 miles.
- H. The lighting system is also very important and should be properly maintained.
  1. Headlights should be checked occasionally to see if they are properly aimed.
    - a. A variation of one degree will cause the beam to be about five feet out of line at a distance of 300 feet down the road.
    - b. This error of one degree can throw the full intensity of the beam right in the eyes of an oncoming driver.
  2. If the beam is not illuminating the road properly, the driver's safety is in jeopardy.
  3. The performance of headlights, stop lights, parking lights and signal lights should be checked frequently and corrections made as needed to assure their efficient operation.
  4. The light lenses should always be kept clean.
- I. The body of the car is also very important.
  1. The car should perhaps be washed once a week or twice a month.
  2. A good wax polish at least twice a year, probably in the spring and fall, will not only protect the car, but also help keep the body looking neat and shiny.
- J. The car should be given a thorough checkup about every five or ten thousand miles.

### Activities

- I. Students may prepare a checklist of the items to be regularly inspected for maintaining safe and efficient car operation.



- II. Students may prepare a diagram of the gauges in their respective family automobile and indicate the use of each.
- III. Students may prepare an automobile inspection blank for regular use on family car.
- IV. Students may prepare posters indicating the various parts which make up the cooling system, the ignition system, the braking system, and the four cycle internal combustion engine.
- V. Students may get old parts from garages, cut them so that the working parts are exposed and discuss the working parts with the class.
- VI. The class or individual student may visit garages and service stations to learn the parts of a car and their use in the automobile.
- VII. Students may consult a reliable automobile dealer or a good mechanic regarding the items to be considered in buying a used car. They may also check reliable buyers' guides.
- VIII. Students in a class may compose a letter to automotive manufacturers asking what efforts are being made to construct safer cars.
- IX. A committee may be appointed to prepare a guidebook to aid motorists in keeping their cars in safe driving condition.

#### REFERENCES

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*Man and the Motor Car* (Fifth Edition). Unit IV: Problems 1-2.  
*Motor's Auto Repair Manual* (Twentieth Edition).  
*Sportsmanlike Driving* (Second Edition). Chapters XII, XIX, XX.  
*Sportsmanlike Driving* (Third Edition). Chapters 6, 7, 18, and 20.  
*The Road to Better Driving.* Chapters 6, 7, and 11.  
*Traffic Law and Highway Safety.* Chapter X.

#### FILMS

*Care of the Car* (16mm. sm. 10 min.). Shows why it is important for a car to be in good condition to insure safe driving.  
*Driving Economically* (16mm. sm. 11 min.). Indicates economical features in handling automobiles which indirectly assists in safe auto operation.

### UNIT IV

#### TRAFFIC LAWS AND ENFORCEMENT

When a person is driving his car, the degree of safety with which he handles the vehicle is controlled by both natural and

man-made laws. The natural laws are put into effect automatically and ignorance of these laws can lead to dangerous, if not lethal, practices.

Any skillful basketball player is familiar with the fundamental rules and regulations of the game. Likewise, a safe and skillful driver would be familiar with the rules and regulations of driving and adhere to them at all times. If every player in the traffic scene would obey the rules and regulations of the highway, vehicular traffic would flow more smoothly and there would be less injury and property damage among motorists.

The enforcement representatives act as referees in the game of life on our highways. When a motorist violates a rule or regulation on the highway, the officer of the law may or may not be there to protect him from himself and other motorists. In the communities with progressive enforcement programs, sound legislation, effective engineering and educational programs, one will see indications of smooth vehicular flow, courteous drivers and low fatality rates.

Students frequently get into trouble because they are unaware of the rules and regulations under which highways should be used. The material in this unit concerns the obligation of drivers to abide by traffic made by man and nature. Observance of these laws will permit traffic to flow more smoothly and safely.

### *Objectives:*

- To give students an understanding of the basic laws of motion and how they affect the operation of a vehicle.
- To help students realize that driving is an activity which requires their full attention, skill and knowledge.
- To give students an understanding of the basic rules and regulations influencing driving.
- To acquaint students with the fact that voluntary observance is better than enforcement.

### **Content**

Since laws are made to protect persons from other persons and themselves, it should be the ultimate aim of every student to learn and abide by the motor vehicle laws of his state. It should also be his desire to learn about the laws of nature as they apply to driving.

#### *I. Natural laws and safe driving.*

##### *A. Gravity holds the car against the road.*

1. The gravitational pull against the car on a down-



- grade increases stopping distance.
- a. The steeper the grade, the longer the stopping distance.
  - b. On steep grades, the driver should shift into a lower gear and use the braking effect of the engine.
  - c. In most states, coasting downhill is illegal.
2. Since sight distance decreases, the motorist should reduce car speed just before he reaches the crest of a hill.
- B. Because of the pull of gravity, the tires are compressed against the road in four small areas through which friction works to start, stop, turn and maintain traction.
1. The control of the moving car depends upon friction between the road and the tires.
  2. The amount of control which a driver has over his vehicle depends upon the coefficient of friction between the tires and the road.
    - a. The coefficient of friction depends upon the design and condition of the tires and the roads.
    - b. The driver must constantly balance his speed against weather conditions, tire conditions, road conditions and types of tires and road surface.
  3. In stopping the car, friction also plays a very important role.
    - a. There must be friction between the brake shoes and drums and between the tires and the road.
    - b. Braking friction and road friction determine the available braking force.
    - c. Control which the driver has over the car varies with the condition of the brakes, tires and road surface.
- C. Friction also plays a very important role when the vehicle is rounding a curve; however, it may be overcome by *centrifugal force*.
1. Centrifugal force tends to prevent the car from changing its course of direction.
  2. This force varies with the sharpness of the curve and the speed of the car.
  3. When centrifugal force overcomes friction, the car, which tends to go in a straight line, skids.

4. The banked type of curve gives more available friction and makes for greater comfort and safety.
  5. The driver should control the speed of his car so that he will always have control, even on the sharpest of curves.
  6. Centrifugal force which tends to push the car off the road varies as the square of the speed.
- D. The energy of motion, *kinetic energy*, also plays a very large part in the control of a vehicle.
1. Kinetic energy of a moving object varies as the square of the speed.
  2. This energy of motion must be used up before a vehicle can be brought to a stop.
  3. The condition of the road, tires and brakes directly affects the rapidity with which the kinetic energy is used up in stopping.
  4. The efficient driver must have an understanding of the part that kinetic energy plays in stopping a car.
  5. Since kinetic energy is proportional to the square of the speed, the faster the car is traveling, the greater the stopping distance.
- E. Another inescapable physical law which affects driving is *force of impact*.
1. Force of impact may be called the destructive striking force of automobiles against automobiles, other objects or persons.
  2. Force of impact varies with the square of the speed of the automobile.
  3. It varies according to the distance which the car travels after it strikes an object. The force of impact is less when an automobile hits dense shrubbery than when it hits a large tree.
  4. The weight of the automobile will cause the force of impact to vary.
- F. The driver must adapt his driving to the laws of motion and energy if he is to drive safely.
1. At all times, the driver should drive at a speed which is reasonable and prudent under existing conditions.



2. In addition to being safer, most cars operate most economically and efficiently at legal driving speeds.

## II. *Man-made laws and safe driving.*

- A. Traffic laws have developed from necessity and custom.
- B. Although all laws are not uniform among the cities and states in the nation. National Conferences on Street and Highway Safety have developed, as guiding principles, a Uniform Vehicle Code, a Model Traffic Ordinance for Cities, and a manual of standards for traffic signs, signals, markings, and islands.
  1. Many states and cities are adopting these guides.
  2. Commercial transportation of property and passengers on highways that cross state lines, movement of the military for defense activities, and traffic over bridges which span navigable waters, are regulated by the Federal Government.
- C. Although some regulations may change, the basic rules of the road remain the same.
  1. Motorists in the United States drive on the right side of the road.
  2. To pass vehicles going in the opposite direction, the motorist remains on the right side of the road.
  3. When driving slowly, the motorist should keep to the right-hand side of the road. (If holding up traffic in the same lane, the motorist should pull off the road to let them pass.)
  4. To pass a vehicle which he is overtaking, in most instances, the motorist should pass on the left of the other vehicle.
  5. The motorist should give the appropriate signal when he plans to slow down, stop, turn left or turn right.
- D. Hand and other signals are very important in reducing accidents by letting other drivers know what one intends to do in all traffic situations.
  1. According to the standards in North Carolina, the appropriate hand signal for signalling the intention to stop or reduce speed may be given by pointing the forearm and hand down (out from the side of the car enough to be visible) with palm back.
  2. The appropriate hand signal for the left-turn may

- be given by extending the arm and hand, with the index finger pointing, straight out and parallel with the pavement.
3. The right-turn signal may be given by holding the forearm and hand straight up (out from the side of the car enough to be visible) with palm forward.
  4. Most of the newer cars have electrical turn signals.
    - a. In North Carolina these devices are legal substitutes for hand signals; however, there are times when they are hard to see.
    - b. During the daylight hours, the light of the sun may be reflected so that it becomes difficult to tell if the signals are flashing.
    - c. At night, one may more readily see an electrical flashing signal than a hand signal.
    - d. Since it is important that the signal be seen, light conditions should guide the driver when to use hand signals or electrical signals.
  5. In addition to hand and electrical signals, car position on the roadway is an important signal to use in conveying your intentions to other drivers.
  6. Motorists should give their signals properly and proudly.
- E. Right-of-way rules are very important in promoting the smooth flow of traffic; however, it is the duty of every driver to use the highways so as to prevent accidents.
- F. Speed plays a very significant part in the traffic scene of America.
1. *Fixed speed limits* support the belief that definite maximal limits should apply for certain places at all times.
    - a. Absolute speed limits are set by legislative acts and any motorist exceeding these limits is subject to arrest and penalty for speeding.
    - b. Although motorists driving within these fixed speed limits are not subject to arrest for speeding, they may be subject to arrest for reckless driving.
  2. *Flexible speed limits* vary according to driving conditions.
    - a. Prima facie speed limits are set up to make motorists aware of what is considered to be



reasonable speed under normal driving conditions.

- (1) A motorist may try to prove in court that, even though he was exceeding the prima facie speed limit, he was not driving too fast for existing conditions.
- (2) Likewise, there may be an endeavor to prove that, even though the motorist was driving at a speed lower than the prima facie speed limit, he was driving too fast for existing conditions.
- b. The prima facie limit leaves the decision of setting the speed for prevailing conditions to the subjective judgment of persons; however, it is favored by many specialists in the field of highway safety.
3. Some states use combinations of fixed and flexible speed limits in order to utilize the advantages of both.
4. In many special areas and under special conditions, speed limits are set lower than open road limits by "speed zoning".
- G. There are laws concerning licensing and ownership which are of importance to everyone.
  1. When a car is purchased, the purchaser should obtain a certificate of title, a registration card, and registration plates.
    - a. In most cases, the dealer who sells a new car will sign a bill of sale, register it with the State Department of Motor Vehicles which will send the owner a certificate of title to the car.
    - b. The motorist should keep his registration card available in case a representative of the Department of Motor Vehicles asks to see it.
    - c. When the motorist receives his registration plate(s), he should attach it or them firmly in the appropriate place(s).
  2. The owner should secure a operator's license before he attempts to drive his automobile.
    - a. In North Carolina, the prospective motorist must take tests on vision, motor vehicle regulations of the State, knowledge of road signs, signals, markings, and road tests.
    - b. A driver's license gives a person the privilege

of operating a vehicle on the highways; however, it may be revoked if he does not assume the responsibility which goes with the privilege.

- H. A motorist who is involved in an accident is under certain moral and/or legal obligations.
  - 1. Stop his vehicle immediately.
  - 2. Turn off ignitions of cars involved.
  - 3. Refrain from smoking in the immediate vicinity of the accident.
  - 4. Give reasonable assistance.
  - 5. Notify law enforcement officers.
  - 6. Get competent care for the injured.
  - 7. Give his name, address, operator's or chauffer's license number, and the registration number of his vehicle to any driver or occupants of any other vehicle involved in the accident or collision and to any person whose property is damaged.
  - 8. Stay at the scene of the accident until he is no longer needed.
  - 9. Make accident reports promptly to the police and to the Motor Vehicle Department is required.
  - 10. Notify his insurance company.
- I. Financial responsibility laws are designed to help protect and increase the safety of the public.

### III. *Law enforcement and driving.*

- A. The protective value of traffic laws is destroyed when the motorist disobeys the rules.
  - 1. Voluntary observance of traffic laws promotes the efficient flow of traffic.
  - 2. Almost every traffic accident involves at least one violation of the traffic regulations.
- B. Traffic law enforcement may be improved.
  - 1. Educate the public concerning the observance of traffic laws.
  - 2. Encourage cooperation among the police, courts and motor vehicle authorities.
  - 3. Provide for adequate personnel, properly trained and supervised.
  - 4. Provide for adequate accident investigations and records.



5. Provide for sufficient amounts of essential equipment.
- C. Voluntary observance and good enforcement can reduce accidents and improve traffic conditions.

### Activities

- I. Students may prepare posters and other audio-visual aids for their use in studying natural laws and their effect upon the automobile.
- II. Students may take cross sections of different types of tire treads and rub them against cement, asphalt and gravel surfaces which are wet, dry and icy to demonstrate the different amounts of friction available under the different types of road surface.
- III. Students may attach a "wind-up" spring driven toy car to a string which will cause it to go in a circle. After the car has moved around in a circle two or three times, cut the string to demonstrate centrifugal force.
- IV. Students may trace the development of motor vehicle laws in the State of North Carolina. They may compare these laws with the Uniform Motor Vehicle Code.
- V. Students may secure information on the amounts and sources of tax money used to support traffic law enforcement activities.
- VI. Students may make posters illustrating uniform highway signs which are recommended for use throughout the country.
- VII. Students may study different types of highway signs. Test students on sign knowledge by using show cards in the classroom.
- VIII. Students may make replicas of road signs and discuss what the signs mean and what the driver's reaction to the signs should be.
- IX. Students may make or purchase a traffic board or other aids to illustrate correct procedures in various traffic situations.
- X. Students may develop a series of traffic situations that require emergency decisions. Have students make decisions. *For example:* one person presents the situation, another makes the decision, and the class appraises the correctness of the student's decision.

- XI. Students may check the performance of drivers with whom they ride and describe the way in which drivers obey or fail to obey rules of the road. Make the check into a *Game of Errors* for all drivers of one family and declare the safest driver for any specific time interval by keeping a record of the errors made by each person.

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*Man and the Motor Car* (Fourth Edition). Chapters VIII-X.  
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*Sportsmanlike Driving* (Second Edition). Chapters IX, X, XI.  
*Sportsmanlike Driving* (Third Edition). Chapters 11, 12, 13.  
*Traffic Law and Highway Safety*. Chapters V-VIII, XI, XII.  
*The Road to Better Driving*, Unit III.  
*Youth at the Wheel*. Chapter IV.

#### FILMS

- A Day in Court* (16mm. sm. 30 min.). The appearance of seven persons in a traffic court, representing seven different types of driver attitudes.  
*Driven to Kill* (16mm. sm. 9.5 min.). Deals with the general subject of traffic safety, with emphasis on proper driver attitudes.  
*Drunk Driving* (16mm. sm. 20 min.). Thesis: "If you drink, don't drive." Shows how a tragic accident ruins a young husband's career. Includes study of police courts in relation to community welfare.  
*Guilty* (16mm. sm. 30 min.). Story of a young man who disregards warning of his brother-in-law about careful driving. Brother-in-law, who is very safety conscious, finally loses his wife when young man smashes up car in which she is riding.  
*Hit and Run Driver* (16mm. sm. 20 min.). A young motorist tries to evade responsibility for running down and seriously injuring two pedestrians on a highway.  
*In the Driver's Seat* (16mm. sm. 18 min.). Discusses solutions to many present-day traffic problems. Shows that teen-agers, with one of the worst driving records of all age groups, can be helped to become safe and sportsmanlike drivers.  
*It's Wanton Murder* (16mm. sm. 10 min.). Portrays the tragic toll which carelessness in driving brought to one family.

#### UNIT V

#### PEDESTRIAN AND BICYCLE BEHAVIOR

In addition to the motor vehicle, the traffic scene is also made up of millions of pedestrians, ranging from two years of age upward, and millions of bicyclists.

Since pedestrians and bicyclists make up the largest part of the traffic scene, it is imperative that everyone have a knowledge of the rules, regulations and safe procedures to observe when walking and cycling.

All persons are pedestrians long before they become motorists; therefore, it is important that everyone learns to walk safely.



Pedestrian safety should be practiced from the time one begins to walk until he is too old to walk. The schools can teach pedestrian safety by having a continuing safety program practiced in all of the grades.

In this unit, students study the practices and procedures which will make walking and cycling safer and more enjoyable.

*Objectives:*

- Have the students learn and practice rules and regulations to be observed by pedestrians.
- Have students learn and practice rules and regulations to be observed by bicyclists.
- Have students become aware of the relationships among pedestrians, bicyclists, and motorists in the traffic scene of today.

### Content

The complexity of the American traffic scene makes it imperative that pedestrians follow safe walking practices and procedures. With each year's increase in drivers, automobiles and population in general, the pedestrian and cyclist must learn the rules and regulations of each player on the traffic scene and act accordingly. In order to increase his chances of survival, the student should take advantage of the opportunities afforded him in the driver education courses.

I. *Pedestrians in the traffic scene.*

- A. Always get into or out of a motor vehicle on the off street side when practical.
- B. Cross the street by using pedestrian tunnels and overpasses when they are available.
- C. If overpasses or tunnels are not available, cross the street at crosswalks.
- D. Cross streets at intersections and at designated crosswalks.
- E. Cross street at right angles.
  1. Cross only on the proper signal.
  2. Give full attention to the traffic situation.
  3. Do not cross between parked cars.
  4. Do not loiter while crossing.
- F. When crossing a roadway at any place other than an intersection, the pedestrian should yield the right of way to all vehicles on the roadway.

- G. When walking along a road or highway where there is no sidewalk, always be alert and aware of traffic.
  - 1. Walk on the left side of the road facing traffic.
  - 2. When meeting motor vehicles, get off the pavement until approaching cars have passed.
  - 3. When the motorist's vision is reduced, the wearing of light colored clothing or something white or a flash-light carried in your hand will help the motorist see that you are a part of the traffic scene.
- H. When carrying an umbrella, do not let it obstruct your view.
- I. When walking in a group, do not play with or shove other members of the group.
- J. Always play in playground spaces; never in the street.
- K. Always wait until the street is clear of traffic before going after balls, toys, or pets which are in the street.

## II. *Bicyclists and safe riding.*

- A. The bicycle should always be kept in tiptop operating condition.
- B. The bicycle should be properly fitted to the rider.
- C. Every rider of a bicycle should know and obey rules regulations governing bicycle-riding in his area.
  - 1. A bicyclist should ride on the right side of the street or highway.
  - 2. Since passengers obstruct the rider's view, a bicyclist should not carry a passenger on a bicycle designed for one person.
  - 3. While riding on the streets or highways, the bicyclist should not "show-off" or perform stunts which make balancing more difficult.
  - 4. When turning left at a heavily traveled intersection, a bicycle rider should follow safe procedures.
    - a. Pull to the curb, stop the bicycle and dismount.
    - b. Walk the bicycle across the intersection, using the pedestrian crosswalk.
    - c. Turn left, again using the pedestrian crosswalk.
    - d. After having crossed one direction of traffic at a time, mount the bicycle and continue riding.
  - 5. Bicyclists should ride single file.
  - 6. A bicyclist should never hold onto or hitch the



bicycle to moving vehicles, since this is a dangerous practice.

7. A bicyclist should not carry anything which will prevent his keeping two hands on the handle bars, since additional weight in either arm will make balancing more difficult.
8. Bicyclists using the public streets and highways operate under the same rules and regulations as motorists.
  - a. Give proper hand signals prior to turning or stopping.
  - b. Obey signs, signals, and stop signs.
  - c. Yield the right-of-way to pedestrians.
  - d. Obey other traffic laws which apply to motorists.
9. Bicyclists should always stop and make sure the way is clear before riding onto a street or highway from a driveway, path, or from any place at which his vision is obstructed.
10. Bicycle riders should remain in their lane of traffic, never weaving in and out among cars.
11. Bicyclists should dismount and walk their bikes across railroad tracks at crossings.
12. When learning to ride a bicycle, one should practice in an area away from traffic.
13. When riding bicycles, riders should always remain alert and attentive.
14. Any bicycle used at night should be equipped with an effective light on the front and a red reflector or light on the rear. (Check legal requirements.)

### Activities

- I. Have students locate dangerous intersections between their homes and the school. They may discuss practices which would make the intersection less hazardous.
- II. Students may observe behavior of pedestrians around the school, list the good and bad practices, and make suggestions which would improve pedestrian activities.
- III. Students may list the playground areas in the community and suggest ways in which playing in the streets could be eliminated.
- IV. Students may develop a set of situations which call for

cooperation between motorists and pedestrians. Discuss reasons for cooperative practices.

- V. Students may develop a code of ethics for pedestrians.
- VI. Students may discuss types of legislation which would make cities, streets, and highways safer places for pedestrians.
- VII. Students may organize a bicycle club which will promote proper parking of bicycles, proper maintenance of bikes, and safe-riding procedures.
- VIII. A bicycle skill program could be helpful in teaching bike skills and in letting the riders know about their capabilities and limitations.
- IX. Bikes may be used as recreational instruments in bike games, rides along trails, bicycle field days and bicycle camping.
- X. Bicycle safety films may be used to promote safe-riding practices.
- XI. Students may indulge in bicycle tours and hikes.

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*Education for Safe Living*, pp. 69, 77-80.  
*Highway Safety and Driver Education*, pp. 33-34, 37-39, 56-58.  
*Let's Drive Right*, pp. 64-68, 73-75, 193, 251, 264, 271, 289, 302, 329-330, 340-342, 356.  
*Man and the Motor Car* (Fourth Edition). Chapters XII, XIV.  
*Man and the Motor Car* (Fifth Edition). Unit 7: Problems 1-2.  
*Safety Education Data Sheet No. 1*.  
*School Patrols for Traffic Safety*.  
*Sportsmanlike Driving* (Second Edition), pp. 112-132, 173-176.  
*Sportsmanlike Driving* (Third Edition), pp. 225-226, 337-357.  
*The Road to Better Driving*. Chapter 5.  
*Traffic Law and Highway Safety*, pp. 65-69.  
*Youth at the Wheel*. Chapter VIII.

#### FILMS

##### PEDESTRIAN

- Adventures of the Walkers* (16mm. sm. 22 min.). Shows two families of pedestrians, one doing things right, one wrong.  
*Heedless Hurry—Endless Worry* (16mm. sm. 10 min.). Deals mostly with pedestrian safety. Safe and unsafe driving practices shown.  
*Read, Heed, and Live* (16mm. sm. 10 min.). Teaches the meaning of different shaped traffic signs and road markers; urges awareness of the meaning of such signs and obedience to their warnings.  
*Let's Stop and Go Safely* (16mm. sm. 16 min.). Deals with traffic safety rules and courtesy for children.  
*Play Safe* (16mm. sm. 10 min.). Produced to teach safe playing, walking and riding habits to the primary grades. Story of a collie dog telling his mistress how his leg was broken when he ran out in the street and



was hit by a car. The teaching sequences include: manners and deportment while riding in an auto; the most important points of safe bicycle riding when, where and how to cross streets; bus and streetcar behavior; care and safety when skating. Briefer coverage is made of playing in the street, accepting rides with strangers, railroad crossings, playing in driveways and the importance of wearing light-colored clothing at night.

*Safety on the Street* (16mm. sm. 10 min.). By comparison on competitive basis a prospective school patrol boy and girl seek to show that each is more safety conscious and better qualified for patrol duty. In determining their scores and attitudes toward safety, many safe and careless practices are illustrated.

*Street Safety Is Your Problem* (16mm. sm. 10 min.). Presents safety practice boys and girls should follow when playing or walking in or near streets, driveways and highways.

*The Safest Way* (16mm. sm. 19 min.). Depicts in dramatic child fashion the step-by-step activities of a group of fourth graders who show how they worked out each child's safest way to school.

*When You Are a Pedestrian* (16mm. sm. 12 min.). Visualizes pedestrian hazards and emphasizes care needed to avert accidents.

*X Marks the Spot* (16mm. sm. 20 min.). Story relates traffic experiences of a somewhat whimsical, though typical, driver and a pedestrian.

#### BICYCLE

*A Monkey Tale* (16mm. sm. 8½ min.). A family of monkeys demonstrates amusingly and effectively the safe and the dangerous ways to ride a bicycle.

*Bicycle Safety* (16mm. sm. 10 min.). Explains and demonstrates the rules of the road and other safety practices for bicycle riders.

*Bicycle Safety Rodeo* (16mm. sm. 15 min.). A definite program is needed to arouse enthusiasm for bicycling safety. Serves as a guide to the training of judges and shows the methods used in handling such a program.

*Bicycling with Complete Safety* (16mm. sm. 15 min.). Shows how an accident in which a bicycle was involved could have been avoided.

*Bicycling Safety Today* (16mm. sm. 18 min.). Common-sense tips on the care of bicycle and safe riding.

*Drive Your Bike* (16mm. sm. 10 min.). Shows you the advantage of "bike drivers" following the same safe practices that are required by law for automobiles and vehicle drivers.

*On Two Wheels* (16mm. sm. 10 min.). Gives rules for safe cycling, each of which is illustrated to a violator in a school traffic court.

*You and Your Bicycle* (16mm. sm. 9 min.). This film gives rules regarding traffic regulations and proper riding.

## UNIT VI

### ENGINEERING: ITS INFLUENCE UPON THE TRAFFIC SCENE

The engineering team, made of automotive, highway and traffic engineers, is endeavoring to reduce the number of hazardous situations which confront participants in the traffic scene. Engineering can provide vehicles, roadways and control measures which contribute to the efficient movement of traffic and create situations in which human error is less likely to result in traffic accidents. However, the success with which these carefully planned facilities are used in the traffic scene is determined by the

manner in which the motorists, pedestrians and cyclists conduct themselves.

A person can more intelligently use highway facilities and appreciate them when he knows some of the planning behind them. In this unit, the student will get an opportunity to become more familiar with the parts played by various engineers in planning facilities.

### *Objectives:*

- To help students understand the contributions which engineering can make to the safety and efficiency of highway transportation.
- To help students realize that the most carefully planned and executed engineering measures are no better than the behavior of the motorists, pedestrians and cyclists for whom they are designed.

### **Content**

When the student learns that highways are carefully planned and built, signs and signals are placed after thorough study, automobiles are designed to be safer and more reliable, and that engineers generally work cooperatively to improve living conditions, he will appreciate the facilities and assume his responsibilities in the traffic scene more readily.

#### *I. Automotive engineers and the traffic scene.*

- A. Automotive engineers are concerned with design and construction of cars.
  - 1. Many modern automobiles have safety devices which contribute to the safety and comfort of motorists.
  - 2. The design of an automobile contributes to its efficiency.
- B. Automotive engineers and research specialists contribute to the efficiency of the automobile by continually developing and testing automotive equipment and accessories.
  - 1. Specialists who develop and test lubricants, gasoline, tires, batteries and other items used in the operation of a car contribute immensely to its efficiency.
  - 2. Engineers who conduct special studies, such as the



“Cornell Crash-Injury Research Study”, make untold contributions to the traffic scene.

## II. *Highway engineers and the traffic scene.*

- A. Highway engineers are concerned with highway design and construction.
  - 1. Modern roads and streets are being made safer through the application of safety-engineering technical processes.
    - a. They are building into the roads and streets many proved safety features which available funds will allow.
    - b. These safety features applicable to the types or class of road or street are more easily built into the roadways during the original construction stage.
  - 2. Highway engineers have improved highways by providing multilaned roadways, grade separations, divided roadways, limited access, proper lighting, and special intersections.
    - a. Many of these safety features can be provided while using or adding to existing facilities.
    - b. Engineers in many states are using white markers on the extreme sides of the road to aid the driver.
- B. Highway departments in many states have research departments which are conducting research in design of highways and tests of materials which are being used in construction of highways, bridges, fills and other materials and processes.
  - 1. The research departments are in many cases the silent partner of the construction engineer in the business of making roadways safer.
  - 2. The findings of research conducted in these laboratories or departments guide highway administrators and engineers in their future planning.

## III. *Traffic engineers and the traffic scene.*

- A. Traffic engineers are primarily concerned with promoting the most efficient use of existing traffic facilities; however, they assist highway engineers in planning major traffic facilities in terms of future use of these roadways.
- B. As the traffic scene becomes more complex, traffic

engineers are giving needed technical advice to highway construction engineers and enforcement officers.

- C. The traffic engineer works on the premise that decisions concerning planning, design, and operation must be guided by facts. The facts which guide a traffic engineer in making these decisions may be obtained through comprehensive traffic studies and surveys. Accident statistics and findings of studies and surveys can serve as bases for future planning.

1. A study of the motor vehicle volume—number of vehicles, directional movements, and variations in the number of motor vehicles passing through intersections and on major routes—will provide basic needed data for planning traffic control and law enforcement, roadway changes, and construction of new facilities.
2. A study of pedestrian volume—number of pedestrians at street intersections, pedestrian crosswalks and/or midblock points—will provide basic data needed for evaluating present crosswalks, pedestrian control facilities, planning future pedestrian facilities, and study of the causes of pedestrian accidents.
3. A study of origin and destination of traffic—the places at which drivers begin their trips and the places at which their trips end—will provide basic data needed for determining the location and designs of new roadways, improvement of roadways, and development of parking facilities.
4. A study of the speeds of vehicles at intersections or points of a non-intersection roadway will provide basic data which will be helpful in determining the proper speed for new or improved roadways, in guiding engineers in the application of control devices, in aiding enforcement and engineering personnel in studying the relation of speed to accidents, and in determining the effectiveness of speed control devices or changes in the enforcement program.
5. A compilation and analysis of accident records will provide the traffic engineer with detailed information relative to high accident frequency locations; data for the preparation of collision diagrams; information aiding the engineer in deter-



mining the proper action for the elimination of hazardous physical conditions; data for justification of action on requests for various traffic control devices in specific locations; and information relative to the need for parking restrictions, one-way streets, by-passes, multilane roadways, thoroughways, and application of the control programs.

6. A study of the reasons for and length of delays for motorists on major routes will provide information which may lead to further study and rectification of causes of delay.
7. A study of parking facilities and their use—number of vehicles, parking, length of time, location of parking, vehicle types, and parking practices in a geographical district—will reveal data which will be useful in evaluating the parking problem and improving regulations for restrictions of existing facilities and provision for additional facilities to alleviate the congestion.
8. A study of existing speed regulations, parking regulations, traffic control devices and one-way streets may lead to action which will adjust these regulations, devices, signs and signals to existing conditions. These actions might culminate in the development of facilities and regulations which would make for safer use of roadways by motorists, pedestrians, and cyclists.

#### IV. *Engineers, educators, enforcement personnel and legislators as a team in the traffic scene.*

- A. Engineering is attempting to make use of the highways easier, safer and more enjoyable for all concerned. Needless to say, the participants in the use of roadways must learn to use the available facilities with optimum intelligence or the works of the engineer will have been of no avail.
- B. Educators, enforcement personnel, engineers and legislators must work cooperatively to develop drivers, roadways and laws which will culminate in the most efficient use of existing facilities.

#### REFERENCES

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*Let's Drive Right*. Chapters 24-27.

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*Man and the Motor Car* (Fifth Edition). Unit 5: Problems 2 & 3.

*Sportsmanlike Driving* (Second Edition). Chapters XXII-XXIV.

*Sportsmanlike Driving* (Third Edition). Chapters 22-24.

*Traffic Law and Highway Safety*. Chapter VI.

*The New Let's Drive Right*. Chapters 14-17.

#### FILMS

*As A Matter of Fact* (16mm. sm. 5 min.). Emphasis on accident records, reporting of accidents, etc., as means of control.

*Engineering for Safety* (16mm. sm. 7½ min.). Reviews the possibility and effect of improved highways in the control of accidents.

*Uniform Laws* (16mm. sm. 6½ min.). Graphically depicts and describes need for uniformity of laws for all states to lessen confusion of the motoring public.





# Laboratory Instruction

## Unit I

### THE STUDENT IN THE AUTOMOBILE

Before beginning this unit, the student will have received instruction in the locations and functions of the engine parts, gauges, safety aids, starting devices, and the car systems in general. Having reviewed *Important parts of an automobile* in Unit III, Classroom Instructions, the student should now learn and practice the steps in starting and stopping the engine.

When the student begins moving the car, the instructor should choose a quiet straight street or off-traffic area which is restricted to little or no vehicular or pedestrian traffic. During the instruction covered in this unit, the student will practice starting in low gear, giving correct hand signals, and stopping smoothly at a chosen spot. When this instruction has been completed, he should be able to perform these procedures accurately and smoothly. While working with this unit, or any other unit, the teacher and the student should remember that the success of the driver education course will depend upon the satisfactory completion of each step.

The teacher should have the student study each complete unit prior to instruction for that unit. After the teacher has demonstrated and explained each of the procedures included in this exercise, he should give the student opportunity to ask questions about the steps. Then each student should practice the procedures until he can execute each step satisfactorily.

#### *Objectives:*

- To give the student practice in starting and stopping the engine.
- To help the student learn the gearshift positions and the correct procedures to use when shifting gears.
- To give the student practice in giving the correct driving signals, hand and electrical.
- To give the student the procedures used in moving the stopping from low gear.
- To give the student practice in moving and stopping the car from low gear.
- To give the student self-confidence in accomplishing these objectives.

## Content

### I. *Starting and stopping the engine.*

- A. Before starting the engine, the driver should check the condition of his car. These checks will include:
  - 1. Air pressure in tires.
  - 2. Fluid in radiator.
  - 3. Liquid level in battery.
  - 4. Oil in crankcase.
  - 5. Gasoline in tank.
  - 6. Lights.
    - a. Stop lights.
    - b. Parking lights.
    - c. Low beam headlights.
    - d. High beam headlights.
    - e. Signal indicator lights.
    - f. License plate light.
  - 7. Brake pedal reserve.
  - 8. Windshield wiper.
  - 9. Horn.
  - 10. Doors closed securely.
  - 11. Seat adjusted properly.
  - 12. Rear-view mirrors adjusted.
  - 13. Windows and other vents adjusted for proper ventilation.
- B. When the student has checked the automobile and found it to be in proper operating condition or has made necessary corrections, he is ready to start the engine. When starting the engine, he should keep the following procedures in mind:
  - 1. Push clutch pedal down to floor.
  - 2. Put gearshift lever in neutral.
  - 3. Set choke for starting.
  - 4. Turn ignition switch to "on" position.
  - 5. Engage starting device.
  - 6. Disengage starting device as engine is running.
  - 7. Stop engine by turning ignition switch to the "off" position.

The instructor may give students a good introduction to practice driving by giving demonstrations of each lesson. These demonstrations should be done slowly, in order to allow the



students to observe closely. Opportunity should be given for students to ask questions about the demonstrations.

## II. *Correct hand signals.*

- A. Procedure—Left hand and arm out the driver's window.
- B. Stop signal—Arm and hand down with palm of hand open and facing backward.
  - 1. Used to indicate stopping.
  - 2. Used to indicate decreasing speed.
- C. Left-turn signal—Arm and hand straight out, pointing index finger.
  - 1. Used in moving from curb into traffic lane.
  - 2. Used in moving to the left lane.
  - 3. Used in moving to a left lane to pass another car.
  - 4. Used in making any left turn.
- D. Right-turn signal—Forearm and hand straight up, palm forward.
  - 1. Used in changing to a right-hand lane on multiple-lane highway.
  - 2. Used when moving to the right lane after having passed another vehicle.
  - 3. Used in making any right turn.

## III. *Correct steering procedures.*

- A. Hands and arms should be kept inside the car except when giving hand signals.
- B. Hands should be kept in proper position on the steering wheel.
  - 1. Right and left hands on the opposite sides of wheel, in order to give pulling ability in both directions.
  - 2. Grip wheel by rim—not by spokes.
  - 3. Have a firm but comfortable grip on wheel.

## IV. *Moving the car in low gear.*

- A. The following steps may be practiced in moving the car in low gear:
  - 1. Press clutch pedal *to the floor*.
  - 2. Place gearshift lever in *low* position—palm up.
  - 3. Check traffic conditions ahead and to the rear.

4. Check "blind spot" by turning head and looking to left rear to observe traffic conditions.
  5. Release parking brake.
  6. Give left-turn signal with hand to warn motorists that you are going to pull out into the street or highway.
  7. Let clutch pedal come up slowly until it reaches the "friction point"—hesitate briefly.
  8. Slightly increase pressure on accelerator to synchronize engine speed with gear speed.
  9. Gradually increase pressure on the accelerator.
  10. Slowly let the clutch pedal come up all the way.
  11. Remove foot from clutch pedal.
  12. Gradually accelerate to approximately eight miles per hour.
- B. The following steps may be practiced when stopping the vehicle from low gear:
1. Check traffic conditions ahead and to the sides.
  2. Check traffic conditions to the rear by using the rear-view mirrors.
  3. Give proper stop signal well in advance.
  4. Push clutch pedal down to disengage clutch.
  5. Take foot off accelerator.
  6. Gradually depress the brake pedal to stop the vehicle—slightly release pressure on brake pedal just before the car stops, in order to make a smooth stop.
  7. Place gearshift lever in neutral position.
  8. Set the parking brake.
  9. Remove feet from clutch and brake pedals.

The student should practice moving and stopping the car in low gear until he can do both procedures smoothly and efficiently. The student may practice judging his stopping distances by trying to stop the front bumper even with stanchions or landmarks.

NOTE: Do not move on to the next unit until the student has satisfactorily mastered these procedures.

## UNIT II

### MOVING THE CAR IN HIGHER GEARS

When the student has mastered Unit I, he should begin to practice shifting into second gear from low and into high gear



from second. As in the previous driving, the teacher should select a straight street away from traffic as a practice area. While the student is doing his practice driving, it is advisable to work with him for short instructional periods, followed by short rest periods when the teacher may make constructive suggestions and the pupils may have opportunity to ask questions. The teacher should demonstrate and explain each of the procedures included in this exercise and have the student practice these procedures until he is able to execute them easily and smoothly.

### *Objectives:*

- To give the student instruction and practice in shifting from low to second gear, driving in second gear and stopping from second gear.
- To give the student instruction and practice in shifting from second to high gear, driving in high gear and stopping from high gear.

## **Content**

### *I. Shifting to and stopping from second gear.*

- A. Procedures for shifting from low to second gear.
  - 1. Accelerate until proper speed for shifting to second gear is attained.
    - a. Attain speed of eight to ten m.p.h.
    - b. Have adequate speed to maintain momentum of the car during the change of gears.
    - c. Speed will vary according to conditions: when going up-grade, down-grade, or in snow, mud, or sand.
  - 2. Push clutch pedal down.
  - 3. Take foot off accelerator.
  - 4. Shift to neutral—palm down—pause slightly in neutral (at the “hesitation point” to help avoid clashing gears) and push gear-shift lever away from the steering wheel and forward into second gear.
  - 5. Apply slight pressure on accelerator.
  - 6. Let the clutch pedal come up slowly and hesitate briefly at the “friction point.”
  - 7. Slightly increase pressure on accelerator to syn-

- chronize engine speed and gear speed.
8. Gradually increase pressure on accelerator.
  9. Slowly let the clutch pedal come up.
  10. Remove foot from clutch pedal and gradually accelerate to about fifteen m.p.h.
- B. Procedures for stopping the car from second gear.
1. Check traffic conditions ahead and to the sides.
  2. Check traffic conditions to the rear by using the rear-view mirrors.
  3. Give proper stop signal well in advance.
  4. Depress the clutch and decelerate.
  5. Take foot off accelerator.
  6. Gradually depress brake pedal to stop the vehicle—slightly release pressure on the brake pedal just before the car stops in order to make a smooth stop.
  7. Place the gearshift lever in neutral position.
  8. Set the parking brake.
  9. Give student practice in judging distances by having him stop at exact spots from second gear.

## II. *Shifting to and stopping from high gear.*

- A. Procedures for shifting from second to high gear.
1. Accelerate until proper speed for shifting to high gear is attained.
    - a. Attain speed of fifteen to twenty m.p.h.
    - b. Have adequate speed to maintain momentum of the car during the change of gears. Speed will vary under different conditions.
  2. Press clutch to the floor.
  3. Take foot off accelerator.
  4. With palm down, shift from second to high gear, hesitating briefly in neutral.
  5. Apply slight pressure to accelerator.
  6. Let clutch pedal come up slowly and hesitate briefly at the "friction point."
  7. Slightly increase pressure on accelerator to synchronize engine speed with gear speed.
  8. Slowly let the clutch pedal come up until the clutch is fully engaged.
  9. Remove foot from clutch pedal and gradually ac-



celerate until the car is moving smoothly in high gear.

10. Remove foot from clutch pedal and place foot on the floor.

B. Procedures for stopping.

1. Check traffic conditions ahead and to the sides.
2. Check traffic conditions to the rear by using the rear-view mirrors.
3. Give proper hand signal well in advance.
4. Depress the brake pedal, which along with engine compression will decrease the speed of the car.
5. When car has been slowed down to about ten m.p.h. or to a speed at which the car begins to jerk, depress clutch pedal to floor.
6. Keep applying pressure on the brake pedal to stop the vehicle—slightly release pressure on brake pedal just before the car stops, in order to make a smooth stop.
7. Place gearshift lever in neutral position.
8. Set the parking brake.
9. Remove feet from clutch and brake pedals.

The student should practice getting the car in motion, shifting through all forward gears, steering, and stopping from all forward gears until he can perform all these procedures smoothly and efficiently.

### UNIT III

#### MORE ADVANCED DRIVING PROCEDURES

When the student has mastered starting, driving and stopping in all the forward gears, he will be ready to develop further driving skills. The student who has developed the skills of shifting into low, second and high gears has shown a real accomplishment. However, it may become necessary for him to shift to lower gears in heavy traffic, before entering busy or blind intersections, before making short turns, when ascending or descending steep or winding hills, and before crossing railroad tracks. The instructor should pick out a wide street with little or no traffic on which the student may practice these "shifting down" and backing exercises.

While learning the forward movements, the student should learn to move the car forward at a very slow pace. This exercise

will give him the feeling of moving slowly and smoothly which is especially essential in backing the car. In backing, the driver should look over his right shoulder and at times, when maneuvering in close quarters, glance to the left; he should never open the door or stick his head out the window. It is imperative that the student realize that the rear-view mirrors do not give him a true picture of all conditions to the rear of his vehicle.

### *Objectives:*

- To give the student instruction in moving and stopping the car while in reverse gear position.
- To give the student an understanding of the necessity for shifting down into lower gears under certain conditions.
- To give the student instruction and practice in the procedures when shifting from higher to lower gears.

## **Content**

### *I. Moving the car in reverse gear.*

- A. It is important that the student have a thorough knowledge of steering the car when backing.
  - 1. The car moves in the same direction in which the top of the steering wheel is turning when the car is moving forward or backward.
  - 2. The rear-view mirror does not give a true picture of the traffic situation to the rear.
  - 3. The door should not be opened in an attempt to see when backing.
  - 4. The driver should look over his right shoulder through the rear window—if necessary, he may support or lift himself up by pressing down on the back of the front seat with his right arm.
- B. When the car is completely stopped, shift into reverse gear.
  - 1. Check traffic conditions ahead and to the sides.
  - 2. Check traffic conditions behind.
  - 3. Press clutch pedal to the floor.
  - 4. With palm up, shift into reverse gear.
  - 5. Release parking brake.
  - 6. Let clutch pedal come up to "friction point" slowly.



7. Exert slight pressure on accelerator.
8. Control backing speed by slipping the clutch.
- C. Procedures for stopping the vehicle while backing.
  1. Check to the front and rear.
  2. Press clutch pedal to the floor.
  3. Take foot off accelerator.
  4. Gradually depress brake pedal to stop the vehicle—slightly release pressure on the brake pedal just before car stops, in order to make a smooth stop.
  5. Continue looking to the rear until the car is completely stopped.
  6. Place gearshift lever in neutral.
  7. Set the parking brake.
- D. The student should practice these procedures until he can back on a straight line at a slow, smooth speed and stop the car at any time.

## II. *Shifting from high to second gear.*

- A. Speed for shifting from high to second gear should be below fifteen m.p.h.
  1. Shifting may be done if car begins to jerk or engine begins to strain.
  2. Speed may be reduced to fifteen m.p.h. by applying brakes.
  3. Give proper hand signal for slow or stop, if speed is being appreciably decreased.
- B. Take foot off accelerator.
- C. Press the clutch pedal to the floor.
- D. With palm down, shift from high to second gear—hesitate briefly in neutral to prevent gears clashing.
- E. Depress accelerator and release the clutch pedal slowly through the "friction point."

## III. *Shifting from second to low gear.*

- A. Shifting from second to low is usually done when car is stopped.
  1. Student should practice the shifting procedure when car is stopped.
  2. Shifting speed when car is moving should be below five m.p.h.

- B. Press the clutch pedal to the floor.
- C. Release the accelerator pedal.
- D. With palm up, shift from second to low—hesitating briefly in neutral.
- E. Accelerate to increase engine speed and release the clutch pedal slowly through the “friction point.”

These procedures should be practiced until the student can perform them smoothly and efficiently.

## UNIT IV

### TURNING THE CAR

When the student has learned to drive the car forward and backward in a straight line, he should be ready to learn and practice procedures used when making turns. The student should realize the importance of making his intentions of turning understood by giving distinct signals well in advance of the maneuver. All gear shifting should be completed and the clutch fully engaged before the student makes the turn, and all short turns should be made at low speeds. When a person needs to shift to a lower gear prior to crossing a highway intersection or railroad, the car should remain in that gear as he proceeds through the intersection or across the railroad. To stall the engine in such situations is dangerous.

The instructor should demonstrate the proper method of signalling, procedures used in turning, and method of using hands on the wheel when making turns. He should give the student opportunity to ask questions before letting him practice making turns.

#### *Objectives:*

- To help the student develop a knowledge of the correct method of giving hand signals by the practice of these signals.
- To give the student practice in preparing for and making right and left turns.
- To give the student practice in using the hand-over-hand technique of steering.
- To give the student practice in turning the car around.
- To give the student opportunity to practice these procedures until he can perform each with efficiency.



## Content

### I. *Review of proper hand signals.*

- A. The student should give signals far enough from the point of turning to warn others, and to allow the driver (or drivers) behind him adequate time and distance to act accordingly.
- B. He should make preparation for turning two or three hundred feet before reaching the actual turning point and should hold signals long enough to give others time to see them.
- C. The student should use the hand-over-hand method of steering when turning curves.

### II. *Making right turns.*

- A. Check traffic conditions ahead and at sides.
- B. Check traffic conditions behind.
- C. Give proper hand signal for right turn before reducing speed.
- D. Approach the turn in right-hand lane.
- E. Stop, when required by highway patrolman, policeman, signals, signs, or traffic conditions, after having given the proper signal.
  - 1. If vehicle is stopped, driver should give right-turn signal again.
  - 2. Under all circumstances, the driver should check traffic conditions in the intersection prior to making the turn.
- F. Shift into a lower gear.
- G. Generally, the car should be about three to five feet from the curb and the front wheels should be just slightly past the curb when the driver starts turning the wheels of the vehicle.
- H. When the turn has been completed, the steering wheel is turned to normal driving position.
- I. The right turn should be practiced by the student until he can perform the maneuver smoothly and efficiently.

### III. *Making left turns.*

- A. Check traffic conditions ahead and to the sides.
- B. Check traffic conditions behind.

- C. Give proper hand signal for left turn before reducing speed.
- D. Approach turn in proper lane. It is important that the car should be put in the left lane sufficiently ahead of time for left turn, this depending on traffic conditions.
  - 1. In two-way traffic approach, turn in lane near center line.
  - 2. In one-way traffic approach, turn in left lane or lane marked for left turn.
- E. Stop, when required by highway patrolman, policeman, signals, signs, or traffic conditions, after having given the proper stop signal.
  - 1. If vehicle is stopped, driver should give left-turn signal again.
  - 2. Under all circumstances, the driver should check traffic conditions in the intersection prior to making the turn.
- F. Shift into a lower gear before turning.
- G. When turn has been completed, the car should be in the same lane on the street into which the driver turned the vehicle.
- H. When well past the intersection, and circumstances permit, the driver may give the proper signal and move over into the right-hand lane.
- I. This left-turn maneuver should be practiced by the student until he can do it smoothly and efficiently.

#### IV. *Turning the car around.*

- A. The student, when turning the car around, should always ask himself:
  - 1. Is it legal to make turns at this place?
  - 2. Is it safe to make the turn here—to pedestrians, me, and other drivers?
  - 3. Will the turn delay traffic?
  - 4. Will pedestrians and other vehicles be safe if I make this turn?
- B. The instructor should demonstrate and allow his student to practice turning around by using a side street, driveway, or an alley on the right. The following procedures will facilitate turns of this type:



1. Check traffic conditions ahead and behind.
  2. Give stop signal well in advance.
  3. Stop near right curb with rear bumper several feet past the alley or driveway.
  4. Check traffic conditions ahead and behind again.
  5. Slowly back into the side street or driveway.
  6. Check traffic conditions before re-entering the highway or busy street.
- C. The instructor should demonstrate and allow his student to practice turning around by using a side street, driveway, or an alley on the left. (This procedure should not be performed on a heavily traveled street or highway, because it is dangerous to back into traffic.) The following procedures will facilitate turns of this type:
1. Check traffic conditions ahead and behind.
  2. Give left-turn signal well in advance.
  3. If traffic is such that the car must be stopped before crossing to the left, give the proper stop signal.
  4. Turn left into driveway, lesser street or alley.
  5. Stop car in proper position for backing.
  6. Check to see that your path is clear.
  7. "Toot" horn to signal intentions of backing.
  8. Back slowly maintaining absolute control.
  9. Back into the lane to which you are entitled. (Lane nearest curb.)
  10. Straighten wheels just before stopping.
  11. Stop—then pull forward in proper lane.
- D. The instructor should demonstrate and let the student practice turning the vehicle around in the width of a street too narrow for negotiation of U-turns. (This procedure should not be performed on a heavily traveled street or highway, because driver is exposed to traffic from all directions.) The following procedures will facilitate turning the vehicle around:
1. Check traffic ahead and behind.
  2. Give proper hand signal for stopping.
  3. Stop the car close to the right curb.
  4. Check traffic conditions in all directions.
  5. Shift into low gear.

6. Give proper signal for left turn and begin moving vehicle slowly.
7. Turn the front wheels as far to the left as possible.
8. Should there not be sufficient width to make the complete turn when the car nears the opposite curb, turn the front wheels as far to the right as possible.
9. Do not allow the front wheels to strike the curb.
10. Check traffic conditions.
11. Shift the gearshift lever into reverse position.
12. With the wheels turned as far to the right as possible, back slowly until you can complete the turn.
13. Turn the front wheels to the left before stopping the car.
14. Proceed forward in the direction which is desired.

These procedures should be practiced until the student can perform them smoothly and efficiently.

## UNIT V

### PARKING THE CAR

The student has been learning the basic maneuvers to be used by drivers. At this point, instruction will move into the procedures used in parking. The instructor should demonstrate procedures to be used in the various types of parking and let the student ask questions. Following the demonstrations, the instructor should let the student practice each exercise until he can perform them smoothly and efficiently. When the student is learning to park, it would be advisable to use stanchions to mark off the parking areas.

#### *Objectives:*

- To give the student instruction and practice in parallel parking.
- To give the student instruction and practice in driving out of a parallel parking position.
- To give the student instruction and practice in parking at an angle to the curb.
- To give the student instruction and practice in backing out of an angular parking position.
- To give the student instruction and practice in stopping and



starting on an upgrade, backing up a grade, and parking on an upgrade or a downgrade.

- To help the student develop skill in these activities.

## Content

### I. *Parking parallel to the curb.*

- A. Check traffic conditions ahead and behind.
- B. Give the proper hand signal for a stop.
- C. Stop the car parallel to and one or two feet away from the car behind which it will be parked.
- D. Back the car slowly.
  1. Control the backing speed with the clutch.
  2. Turn the steering wheel sharply to the right until the car is at approximately a  $45^\circ$  angle from the curb. At this point, the front right door of your car should be opposite the rear bumper of the car in front of you.
  3. Straighten the wheels of your car.
  4. Continue backing your car slowly until the right end of your front bumper is opposite the left end of the rear bumper of the car in front of you. At this point, your left rear wheel should be about one and one-half feet from the curb.
  5. Move backward slowly as you turn the steering wheel left all the way and clear the vehicle parked ahead; then back slowly into parking space. At this point, the rear wheel should be close to the curb, but not touching it.
  6. Drive forward slowly while turning the steering wheel to the right—quickly—in order to bring the car parallel to the curb.
  7. Continue forward until the car is an equal distance between the cars in front and behind.
  8. Set parking brake.
  9. Switch off ignition.
  10. Set gearshift in reverse or low gear position.
  11. Roll the car windows up and close the ventilator windows.
  12. Check to be sure you have the ignition key with you.

13. Get out of vehicle on the side away from traffic.
14. Lock the car doors.

II. *Moving from parallel parked position.*

- A. Back the car until it is four or five inches from the bumper of the car behind you.
- B. Shift into low gear.
- C. Check traffic conditions.
- D. Give proper hand signal for left-turn.
- E. Drive forward very slowly and at the same time turn steering wheel rapidly to the left.
- F. When your right front door is opposite the rear door of the car, you should be able to steer safely around it.
- G. Turn your steering wheel to the right as you slowly enter the correct traffic lane.
- H. Proceed as you normally would when in traffic.

NOTE: The student should not turn the wheels of the car while the car is stationary. These procedures should be practiced by the student until he can perform the maneuvers smoothly and efficiently. It is very important that the student be able to judge distances and know the positions of the extremities of his car.

III. *Parking at angle (head-in stall).*

- A. The car should be in the lane adjacent to the parking space.
- B. Check traffic condition ahead, behind and to the sides.
- C. Give the proper hand signal to indicate that you intend to reduce the speed of your car, and stop.
- D. Place gearshift lever into low position.
- E. Steer your car to the left at least five feet as you approach the space.
- F. Steer sharply to the right and center your car in the parking space. Check all extremities of your car to be sure they will clear the cars parked adjacent.
- G. Move your car forward slowly, letting the right front touch, but not bang against, the curb.
- H. Place the gearshift lever in neutral position.
- I. Set the parking brake and turn the ignition switch "off".



- J. Close all windows, check to be certain that you have the ignition key with you, and lock the doors to the car.

#### IV. *Backing from angle parking space.*

- A. Check traffic conditions.
- B. Move the car back slowly and carefully.
- C. Stop the car to check traffic conditions to be sure the way is clear.
- D. As an extra precaution, tap the horn to warn pedestrians and other traffic, which you may not see, that you are moving into the traffic lane (unless laws prevent horn blowing at that particular location).
- E. Continue backing until the left front tire of your car passes the rear bumper of the car on your left.

NOTE: If an adjacent vehicle is improperly parked, you may need to back out farther or do additional maneuvers to get out safely.

- G. Turn the steering wheel sharply to the right as you continue backing.
- H. When the car comes back into the lines of traffic, straighten your wheels by turning the steering wheel to the left and stop the car.
- I. Shift gear into low position.
- J. Drive forward in the lane of traffic on the right side of the highway.

#### V. *Parking at angle (Back-in stall).*

- A. Your car should approach in the lane adjacent to the parking space.
- B. Check traffic conditions ahead, behind and to the sides.
- C. Give the proper hand signal to indicate your intentions to reduce the speed of your car and stop.
- D. Drive past the parking space until your rear bumper is opposite the center of the next parking space and stop.
- E. Observe traffic conditions and begin to back the car slowly when traffic permits.
  - 1. Turn the steering wheel to the extreme right to place the car in position to back straight in.

2. Straighten wheels and ease back very slowly until the rear wheels touch the curb.

VI. *Driving from angle parking space.*

- A. Check traffic conditions to the left and to the right.
- B. When traffic permits, shift into low and ease out of the parking stall.
- C. Once your car can clear the bumper of the car on your right, turn your wheels to the right and drive in the right lane.

VII. *Stopping and starting on up grade.*

- A. The student should practice stopping procedures after the instructor has demonstrated and explained the correct practices.
  1. Observe traffic conditions ahead, to the sides and behind.
  2. Give correct hand signal for a stop.
  3. Press clutch and brake pedals down simultaneously, to bring the car to a smooth stop.
  4. Set parking brake to keep the car from rolling back.
- B. After having learned and practiced stopping on an upgrade, the student should learn and practice starting the car on an upgrade.
  1. Depress clutch.
  2. Shift gearshift lever to low position.
  3. Check traffic conditions.
  4. Release clutch to "friction point".
  5. Accelerate gently and slip the clutch to hold the car.
  6. Gradually release hand brake and accelerate to get the car into motion smoothly.
- C. To practice backing the car upgrade, the student should follow the procedures (given in Guide IV) for starting on an upgrade and backing.

VIII. *Parking on upgrades and downgrades.*

- A. If the student follows the suggested procedures, he should have very little difficulty in parking on an upgrade.
  1. Check traffic conditions.



2. Give appropriate hand signal to indicate a stop.
3. Maneuver the car until it is parallel to and about six inches from the curb.
4. Place the gearshift lever in low position, move forward slowly, and turn the front wheels hard to the left until the right front wheel is about two feet from the curb.
5. Depress clutch and apply the foot brake.
6. Decrease pressure on the brake and allow the car to roll back slowly until the right front wheel touches the curb.
7. Set parking brake.
8. Turn ignition off.
9. Place the gearshift lever in reverse or low position.

**NOTE:** If the street has no curb, turn front wheels toward the shoulder of the street. This would cause the car to roll away from the stream of traffic, if it should happen to roll back after you have parked it.

- B. The procedures used in parking on a downgrade are slightly different from those used in parking on an upgrade.
1. Check traffic conditions.
  2. Give proper hand signal for a stop.
  3. Maneuver the car until it is parallel to and about six inches from the curb.
  4. With foot on brake, control the forward movement of the car.
  5. Turn front wheels hard to the right allowing the right front wheel to touch the curb lightly.
  6. Place the gearshift lever in reverse position.
  7. Apply parking brake.
  8. Turn ignition switch off and remove feet from clutch and brake pedals.

These procedures should be practiced by the student until he can perform them smoothly and efficiently.

When the student has learned these practices, the instructor may take him out on the open highway to practice the correct procedures and to develop sportsmanship in open-road driving. The student may also benefit from practice in driving at night and under adverse conditions.

## UNIT VI

### DRIVING IN TRAFFIC

Having completed the previous lessons, the student, theoretically, is ready to do solo driving; however, in reality no person learns everything which he needs during the instructional period. At this time, the teacher may set up skill testing areas and areas for road testing in traffic which will include exercises involving all the learning activities the student has experienced (starting from parallel parking position, signalling, interpreting traffic signs, signals and markings, making left and right turns, stopping for railroads, turning about in a street, parking on an upgrade and downgrade, backing down a street, passing vehicles going in same direction, and parallel parking, and extending to a comprehensive test involving all of these factors including speed control). After having set up these practice areas, the teacher may have the student driver negotiate these areas. While the student is driving, the teacher should check the mistakes which are being made by the student. The teacher may, by looking at his check sheet, determine the areas of instruction in which the student needs further work and help.

In addition to appraising driving ability, the teacher will get a better understanding of the student's attitudes. *For example:* The student may realize that he must perform some maneuver for which he is not prepared, and his reaction to this situation will give the teacher an insight into his efficiency in driving. Perhaps, the student realizes, while he is in the traffic lane nearest the center line, that he must make a right turn at an intersection. If he does not have time to give a hand signal and change the position of his car, he should continue forward progress and make the turn later, or go on until he can make the turn properly. If he makes the turn without regard for other traffic, he is not thinking ahead and needs further work in the car.

Upon completing the appraisal of the student's driving abilities, the teacher should study the results with the student; discuss the student's traits of a good driver; the traits which need improving; and give the student opportunity for additional instruction and practice needed to overcome his weaknesses as a driver. The teacher should try to maintain his composure and avoid frightening the student driver.

Although there is a great deal of merit in the quotation taken from Shakespeare's *MERCHANT OF VENICE*, "I can easier teach twenty what were good to be done, than be one of the twenty to follow mine own teaching," teachers are urged to exemplify good driving by following their own instructions.



## UNIT VII

### AUTOMATIC TRANSMISSIONS

Automatic transmissions, which are included as standard equipment in many automobiles, have reduced the number of steps involving hand and foot operations required of drivers in getting the car underway and maneuvering it. Actually, the development of automatic transmissions for cars has made driving much easier.

Automobiles with automatic transmissions have much in common as far as procedures used in their operation are concerned. However, the minor differences among automobiles make it imperative that each person driving a car study the manufacturer's manual prepared for that vehicle.

Although some of the driving operations in the automobiles with automatic transmissions are similar to those in gearshift cars, there are marked differences in many of the driving procedures. These differences are such that a supplement to the behind-the-wheel phase for gearshift cars has been included to aid teachers who use automobiles equipped with automatic transmissions.

#### *Objectives:*

- To practice starting and stopping the engine.
- To practice setting the car in motion and stopping it.
- To practice backing and stopping the car when backing.
- To practice shifting down to lower gear ratios.
- To learn steps to practice when parking the car.

#### **Content**

##### *I. Starting and stopping the engine.*

###### **A. Starting the engine.**

1. Check parking brake.
2. Move selector to N (Neutral) or P (Park) position.
3. Press accelerator down and let it up to set automatic choke.
4. Turn ignition switch to *on* position.
5. Apply pressure to starting device until engine starts, then release.

- B. Stopping the engine—ignition key should be turned to *off* position.

## II. *Setting the car in forward motion and stopping it.*

- A. Setting the car in motion.
  - 1. Press brake pedal with right foot.
  - 2. Move selector level to D (Drive) position.
  - 3. Check traffic conditions by direct visual check in all directions.
  - 4. Check traffic conditions again by using rear-view mirrors and turning head.
  - 5. Release parking brake.
  - 6. Check "blind spot."
  - 7. Give left-turn signal.
  - 8. Remove foot from brake pedal.
  - 9. Gradually press accelerator pedal with right foot.
- B. Stopping forward motion of the car.
  - 1. Check traffic conditions ahead.
  - 2. Check traffic conditions to the rear by using rear-view mirrors.
  - 3. Give proper stop signal well in advance.
  - 4. Let up on accelerator easily.
  - 5. Press brake pedal gradually.
  - 6. Lighten pressure on brake pedal just before stopping to get a smooth stop.

## III. *Backing the car.*

- A. Car should be at a complete stop.
- B. Backing the car.
  - 1. Check parking brake.
  - 2. Press brake pedal with right foot.
  - 3. Place selector lever in R (Reverse) position.
  - 4. Release parking brake.
  - 5. Check traffic conditions in front and on the sides.
  - 6. Check traffic conditions to the rear by looking over right shoulder.
  - 7. Remove foot from brake pedal.
  - 8. Press accelerator pedal very lightly.
  - 9. Control speed by pressure on brake and accelerator pedals alternately.



- C. Stopping the car.
  - 1. Remove right foot from accelerator pedal.
  - 2. Move right foot to brake pedal.
    - a. Press gradually to stop car.
    - b. Just before car stops, lighten pressure on brake pedal to get a smooth stop.
  - 3. Move selector to N (Neutral) position.
  - 4. Set parking brake.
  - 5. Turn ignition off.
  - 6. Leave car with ignition key in hand.
  - 7. Lock car doors.

#### IV. *Downshifting.*

- A. L or Lo (Low) position is used for: heavy pulling, starting on steep grades, downgrade engine braking, and "rocking" the car when stuck.
- B. Starting the car in L or Lo.
  - 1. Check parking brake.
  - 2. Press right foot on foot brake.
  - 3. Move selector to L or Lo position.
  - 4. Set parking brake down.
  - 5. Check traffic conditions to the front and sides.
  - 6. Check "blind spot."
  - 7. Give left-turn signal.
  - 8. Apply pressure gently to accelerator pedal.
  - 9. Move selector to D or Dr (Drive) position when car has picked up speed.
- C. Shifting to L or Lo range when car speed drops sufficiently.
  - 1. Check manufacturer's manual.
    - a. Reduce speed sufficiently.
    - b. Move selector to lower range.
  - 2. Forced downshift.
    - a. Press accelerator to the floor quickly.
    - b. Ordinary use of accelerator will cause return to higher gear.

#### V. *Parking.*

- A. Stopping the car.
  - 1. Check traffic conditions.
  - 2. Give proper stop signal.

3. Ease pressure on accelerator pedal.
  4. Press brake pedal.
  5. Lighten pressure on brake just before stopping to get a smooth stop.
- B. Leaving the car after stopping or parking.
1. Move the selector to P (Park) position.
  2. In cars without P (Park) position, move selector to R (Reverse) position.
  3. Set parking brake.
  4. Turn ignition off.
  5. Take ignition key in hand and get out of car.
  6. Lock the car.

The other procedures which may be practiced with cars having automatic transmission are very similar to procedures used with regular gearshift cars. See lessons dealing with cars having regular gearshift.

## REFERENCES AND FILMS

### REFERENCES

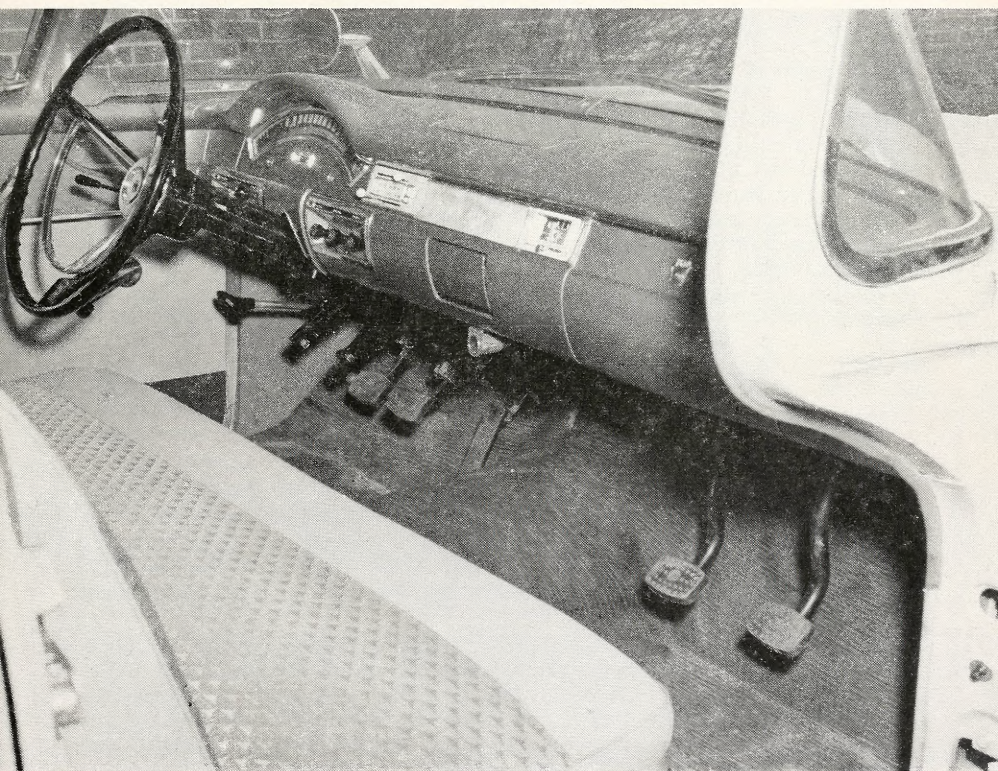
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*Practice Driving Guides*—For Use with Gearshift Cars.  
*Practice Driving Guides*—For Use with Cars with Automatic Transmissions.

### FILMS

- Defensive Driving* (16mm. sm. 10 min.). By "defensive" driving a good skilled driver can avoid accidents by anticipating the moves of the car "over the hill," "approaching," and the one behind him not yet in view. Impresses the necessity of always being on the alert.
- Driver Training: Advanced Turning Movements* (16mm. sm. 9 min.). Demonstrates clearly and graphically the proper methods of making the four basic turning movements in driving: changing from one lane to another; making a left turn at a busy intersection; backing into a parallel parking space; and making a U-turn on a narrow street.
- Driver Training: Driving the Gear Shift Car* (16mm. sm. 9 min.). Shows the correct procedure used in operating a gear shift car.
- Driving at Night* (16mm. sm. 10 min.). Shows necessity of being more careful during night driving.



- Driving Economically* (16mm. sm. 11 min.). Indicates economical features in handling automobiles which indirectly assists in safe auto operation.
- Driving in the City* (16mm. sm. 10 min.). Deals with important factors on driving in cities and towns.
- Driving on the Highways* (16mm. sm. 10 min.). Shows the importance of careful driving on the highways.
- Driving Under Adverse Conditions* (16mm. sm. 10 min.). Gives pointers necessary for everyone to make driving safer under adverse conditions.
- Learn and Live* (16mm. sm. 15 min.). Demonstration of the methods used in driver training courses to teach the new driver the rudiments of driving skills.
- Night and Bad Weather Driving* (16mm. sm. 11 min.). Shows the safety steps to take when driving during bad weather—care of the car safety appliances—how to prevent a skid—and many other safety precautions. Shows correct passing; need for not overdriving headlights; care of lighting system, etc., and why darkness and bad weather are significant causal factors in traffic accidents.
- Parking the Car* (16mm. sm. 10 min.). Gives the necessary instructions on parking a car.
- Practice Makes Perfect* (16mm. sm. 11 min.). Indicates the training and follow-up practice which tends to increase driver efficiency.





# Appendix

## Chapter 20. Motor Vehicles

### ARTICLE 3. MOTOR VEHICLE ACT OF 1937.

20-88.1. Driver Training and Safety Education Fund.—Beginning January 1, 1958, each and every passenger or property carrying vehicle registering with the Department of Motor Vehicles, for which the registration tax is now being paid at the annual rate of ten dollars (\$10.00) or more, shall pay an additional annual registration tax of one dollar (\$1.00). The revenue derived from the additional tax of one dollar (\$1.00) shall be placed in a separate fund to finance a program of driver training and safety education in the public high schools of the State, and the amounts so collected shall be transferred periodically to the account of the State Board of Education. The State Department of Public Instruction shall establish standards for courses to be offered in the public high schools of the State for driver training and safety education. The State Board of Education shall allocate funds to the public high schools throughout the State which offer courses of driver training and safety education meeting the standards established by the State Department of Public Instruction for such courses. The allocation of such funds by the State Board of Education shall be sufficient to provide for said courses, shall be allocated from the revenue derived from the additional registration tax herein provided for, and in addition, the State Board of Education shall allocate to the State Department of Public Instruction funds sufficient for the proper administration and supervision of the program of driver training and safety education offered in the public high schools of the State. The State Board of Education shall allot each year for the use of each school administrative unit in the State for such driver training and safety education course its proportionate share of said fund, based upon each such school administrative unit's current annual enrollment of eligible pupils; and such funds shall be cumulative. (1957, c. 682, s. 1.)

**Editor's Note.**—Section 2 of the act inserting this section provided that no credit for courses in driver training shall be allowed toward meeting graduation requirements.

## Chapter 115. Education

### SUBCHAPTER X. INSTRUCTION

#### Article 24. Courses of Study

115-201. Instruction in driver training and safety education.—There shall be organized and administered under the general supervision of the State Superintendent of Public Instruction a program of driver training and safety education in the public schools of this State, said courses to be noncredit courses taught by instructors approved by the State Department of Public Instruction.

For the purpose of providing standards and administering such program of driver training and safety education in the public schools of the State, the sum of twenty-five thousand dollars (\$25,000.00) shall be transferred from the appropriation out of the Highway Fund of the State for the Department of Motor Vehicles, Highway Patrol, Driver's License and



Safety Promotion for each year of the biennium to the State Department of Public Instruction to be used for the salaries, travel, and other expenses of supervisory personnel necessary to carry out the provisions of this section. (1953, c. 1196; 1955, c. 1372, art. 23, s. 4.)

**115-202. Boards of education authorized to provide courses in operation of motor vehicles.**—(1) Course of Training and Instruction Authorized in Public High Schools.—The State Board of Education and county and city board of education in this State are hereby authorized to provide as a part of the curriculum of the public high schools in this State a course of training and instruction in the operation of motor vehicles and to make such course of training available to high school students who are found and designated to be eligible for such course of training and instruction as hereinafter provided.

(2) Inclusion of Expense in Budget.—The county and city boards of education of every administrative unit are hereby authorized to include as an item of instructional service and as a part of the current expense fund of the budget of the several high schools under their supervision, the expense necessary to install and maintain a course of training and instructing eligible students in such schools in the operation of motor vehicles.

(3) Appropriations.—The boards of county commissioners in the several counties of the State and the governing bodies of all municipalities having power to appropriate and raise money by taxation and otherwise are hereby authorized to appropriate funds necessary to pay the expenses necessary to install and maintain in any public high school under their supervision a course of training and instruction for eligible students in such schools in the operation of motor vehicles, whether or not the county board of education or administrative unit shall have included the cost of the same in its budget request when submitted for approval.

(4) How Moneys Appropriated May Be Provided.—The board of county commissioners in the several counties of the State and the governing bodies of all municipalities having power to appropriate money and to levy taxes and raise money are hereby authorized to provide the moneys appropriated pursuant to this section or pursuant to any other general, special or public-local act providing for such course of instruction and training in any public high school, by taxation, or by sale or rental of any real or personal property owned by such county or other taxing unit, or by use of any surplus funds on hand or acquired from any source; and the special approval of the General Assembly is hereby given for the levying of taxes for such purpose and for providing funds for such purpose by the other means herein mentioned.

(5) Content of Course; What Students Eligible.—The words “a course of training and instruction for eligible students in the operation of motor vehicles” as applied to this section shall be construed to mean such course of instruction in the operation of motor vehicles as shall be prescribed or approved by the State Department of Public Instruction, provided that every such course shall include actual operation of motor vehicles by the students eligible for same, under the supervision of a qualified instructor. Only such students of the completed age of 14 years and 6 months, and as shall be designated by the principal of the school upon recommendation of two teachers, shall be eligible for such course of instruction, subject to rules and regulations prescribed by the State Department of Public Instruction.

(6) Acts Ratified and Confirmed—The acts of all boards of county

commissioners and the governing bodies of all municipalities, the acts of all county and city boards of education, and the acts of the State Board of Education heretofore done in connection with providing courses of training and instruction in the operation of motor vehicles in this State, including the appropriation and expenditure of funds for such purpose, are hereby ratified and confirmed. (1955, c. 817.)

**Editor's Note.**—This section, which became effective upon ratification, May 4, 1955, and paragraph 115-201, which was ratified May 26, 1955, do not seem to be in conflict.

## **Chapter 20. Motor Vehicles**

### **Article 2. Uniform Driver's License Act**

**20-7. Operator's and chauffeurs' licenses; expiration; examinations; fees.**—(1-1) The Department upon receiving proper application may in its discretion issue a restricted instruction permit effective for a school year or a lesser period to an applicant who is enrolled in a driver training program approved by the Department even though the applicant has not yet reached the legal age to be eligible for an operator's license. Such instruction permit shall entitle the permittee when he has such permit in his immediate possession to operate a motor vehicle subject to the restrictions imposed by the Department. The restrictions which the Department may impose on such permits include but are not limited to restrictions to designated areas and highways and restrictions prohibiting operation except when an approved instructor is occupying a seat beside the permittee.

## **Chapter 115. Education**

### **SUBCHAPTER II. ADMINISTRATIVE ORGANIZATION**

#### **Article 5. County and City Boards of Education**

**115-53. Liability insurance and waiver of immunity as to torts of agents, etc.**—Any county or city board of education, by securing liability insurance as hereinafter provided, is hereby authorized and empowered to waive its governmental immunity from liability for damage by reason of death or injury to person or property caused by the negligence or tort of any agent or employee of such board of education when acting within the scope of his authority or within the course of his employment. Such immunity shall be deemed to have been waived by the act of obtaining such insurance, but such immunity is waived only to the extent that said board of education is indemnified by insurance for such negligence or tort.

Any contract of insurance purchased pursuant to this section must be issued by a company or corporation duly licensed and authorized to execute insurance contracts in this State and must by its terms adequately insure the county or city board of education against any and all liability for any damages by reason of death or injury to person or property proximately caused by the negligent acts or torts of the agents and employees of said board of education or the agents and employees of a particular school in a county or city administrative unit when acting within the scope of their authority or within the course of their employment. Any company or corporation which enters into a contract of insurance as above described with a county or city board of education, by such act waives any defense based upon the governmental immunity of such county or city board of education.

Every county or city board of education in this State is authorized and empowered to pay as a necessary expense the lawful premiums for such insurance.



Any person sustaining damages, or in case of death, his personal representative may sue a county or city board of education insured under this section for the recovery of such damages in any court of competent jurisdiction in this State, but only in the county of such board of education; and it shall be no defense to any such action that the negligence or tort complained of was in pursuance of a governmental, municipal or discretionary function of such county or city board of education if, and to the extent, such county or city board of education has insurance coverage as provided by this section.

Except as hereinbefore expressly provided, nothing in this section shall be construed to deprive any county or city board of education of any defense whatsoever to any such action for damages, or to restrict, limit, or otherwise affect any such defense which said board of education may have at common law or by virtue of any statute; and nothing in this section shall be construed to relieve any person sustaining damages or any personal representative of any decedent from any duty to give notice of such claim to said county or city board of education or to commence any civil action for the recovery of damages within the applicable period of time prescribed or limited by statute.

A county or city board of education may incur liability pursuant to this section only with respect to a claim arising after such board of education has procured liability insurance pursuant to this section and during the time when such insurance is in force.

No part of the pleadings which relate to or allege facts as to a defendant's insurance against liability shall be read or mentioned in the presence of the trial jury in any action brought pursuant to this section. Such liability shall not attach unless the plaintiff shall waive the right to have all issues of law or fact relating to insurance in such an action determined by a jury and such issues shall be heard and determined by the judge without resort to a jury and the jury shall be absent during any motions, arguments, testimony or announcement of findings of fact or conclusions of law with respect thereto unless the defendant shall request a jury trial thereon; Provided, that this section shall not apply to claims for damages caused by the negligent acts or torts of public school bus drivers.

The several county and city boards of education in the State are hereby authorized and empowered to take title to school buses purchased with local or community funds for the purpose of transporting pupils to and from athletic events and for other local school activity purposes, and commonly referred to as activity buses. The provisions of this section shall be fully applicable to the ownership and operation of such activity school buses. (1955, c. 1256; 1957, c. 685.)

**Editor's Note.**—The 1957 amendment added the last paragraph.

## **RULES AND REGULATIONS GOVERNING THE OPERATION OF COURSES IN DRIVER TRAINING AND SAFETY EDUCATION**

**(Adopted by The State Board of Education January 2, 1958)**

### **A. Eligibility of Students**

Any regularly enrolled student in a public high school who has attained the minimum age of 14 years and 6 months shall be eligible to enroll

in the *classroom* phase of a driver training and safety education course. Any such student who has satisfactorily completed or who is concurrently enrolled in the classroom phase of the course shall be eligible for the *behind-the-wheel and practice driving* phase of the course, if he qualifies for and presents one of the following: (1) a restricted instruction permit, (2) a learner's permit, or (3) an operator's license, as required by Motor Vehicle Laws.

#### B. Program of Instruction

1. The driver training and safety education course shall consist of a minimum of thirty (30) clock hours for *classroom* instruction and a minimum of six (6) clock hours per student for *behind-the-wheel instruction and practice driving*, exclusive of time spent in the car as an observer.
2. The State Department of Public Instruction shall prepare a handbook which shall contain the course of study, the laws relating to this subject, copies of these rules and regulations, suggestions for scheduling procedures, the necessary record forms, and such other materials as may be necessary in operating this program.
3. Textbooks used in driver training and safety education courses shall be selected and adopted by the State Board of Education in accordance with North Carolina Public School Laws. Textbooks so selected and adopted shall be purchased by boards of education with funds allotted to their administrative units under the provision of the act creating the driver education program, or from other funds appropriated for driver education.
4. A student satisfactorily completing the prescribed course in driver training and safety education shall be issued a certificate on a form prepared by the State Superintendent of Public Instruction. This certificate shall be used uniformly throughout the State and shall show the school at which the course was offered, the number of hours of instruction received, and the date when the course was completed. Signatures of the instructor and the principal of the school shall be affixed to the certificate.
5. Driver training and safety education courses may be offered, as a part of the total school curriculum, during the regular six-hour school day or at any other time during the day or the year in the discretion of the local board of education.

#### C. Instructional Personnel

1. Any person meeting the qualifications of teaching in the elementary and secondary schools of North Carolina and who has completed a minimum of two semester hours of college credit in preparation for teaching driver training and safety education shall be eligible for certification as an instructor in this program. Any person who has been trained and approved for teaching driver education by the State Department of Public Instruction and any other person who has satisfactorily completed at least forty clock hours of classroom and in-the-car instruction prior to September 1, 1959, may substitute such training in lieu of the two semester hours of college credit required above.



2. Each instructor shall possess a valid driver's license and shall have an acceptable driving record, as shown by the records of the State Department of Motor Vehicles.
3. Certification of instructors in this program shall be administered by the Division of Professional Service of the State Department of Public Instruction in accordance with rules and regulations of the State Board of Education.
4. Teachers of driver training and safety education shall be nominated by the superintendent and elected by the county or city board of education, and the conditions of their employment shall be subject to the rules and regulations of local boards of education.
5. By agreement of the boards of education concerned, properly recorded in their minutes, instructors in driver training and safety education may be employed for work in adjacent administrative units.
6. State-allotted teachers paid from the Nine Months School Fund shall not be used as instructors in driver training and safety education courses during the regular school day; except that for the year 1958-59, during the period of expansion of this program, such State-allotted teachers may be used during the regular school day for the *classroom* instruction phase of the driver training course not to exceed one class period per day.
7. In cases where it is impossible to employ a full or part-time instructor in driver education, State-allotted teachers paid from the Nine Months School Fund may be employed for the year 1958-59 as instructors in driver training and safety education for work after the close of the regular school day. Their salaries for this additional work shall be paid entirely from funds allotted for driver training and safety education. Such teachers allotted from the State Nine Months School Fund shall not be permitted to serve as instructors in driver training and safety education for more than ten hours during the regular five-day school week.

#### D. Plan of Operation

On or before July 1 of each year the superintendent shall submit, in duplicate, to the State Superintendent of Public Instruction:

1. A proposed plan for operation for organizing and conducting courses in driver training and safety education in the high schools of the administrative unit.
2. A proposed budget in support of the contemplated plan of operation.

The proposed plan and budget, to be prepared on forms supplied by the State Superintendent of Public Instruction and the Controller of the State Board of Education, shall be approved and certified by the local board of education. Subsequent transfers and changes in the plan of operation and budget shall be filed as stated above.

#### E. Plan for Finance

1. *Date of Allotment:* The State Board of Education will make the allotments each year to each school administrative unit on or before May 15 as nearly as may be practicable.

2. *Allotment*: To carry out the above purpose, the State Board of Education will follow these procedures:
  - a. *Revenues*—Determine the total amount of revenue derived for driver training and safety education under G. S. 20-88.1 up to May 1 of each year.
  - b. *Administration and Supervision*—Determine the amount necessary for the administration and supervision of the program of driver training and safety education by the State Board of Education and State Department of Public Instruction and set up, out of the total amount under 2 (a) above, such amount for this purpose.
  - c. *Available Funds for Allotment*—Determine the total net amount available for allotment to all the school administrative units.
  - d. *High School Enrollment*—Determine from the Organization Statements filed by all county and city boards of education with the State Board of Education at the end of the seventh school month of the current school year the high school enrollment, students in Grades 9 to 12 inclusive, in each school administrative unit and for the entire State.
  - e. *Allotment Per High School Pupil*—Determine the amount for allotment per high school pupil enrolled by dividing the total amount available for allotment to all the school administrative units under 2 (c) above by the State-wide high school enrollment determined under 2 (d) above.
  - f. *Allotment to Units*—Determine the total amount of the allotment to each school administrative unit by multiplying the high school enrollment in each unit by the amount available per high school pupil enrolled as determined under 2 (e) above.
  - g. *Plan of Operation and Budget*—The State Superintendent of Public Instruction, after approval and certification of the proposed plan of operation and budget as submitted by the county or city board of education, shall transmit one copy of such plan and budget to the Controller of the State Board of Education. Upon the receipt of this certification, the Controller shall make the funds available for expenditure by the administrative units as provided for in 4 (b) below.
  - h. *Allotment Balances*—Carry forward from year to year on a cumulative basis any balance to the credit of an administrative unit at the end of each fiscal year.
3. *Uses of Allotments*: Within the amount of State funds allotted to an administrative unit, county and city boards of education may use such funds to provide courses in driver training and safety education which meet the standards established by the State Department of Public Instruction, expenses of which may include the following:
  - a. *Salaries of Teachers*—Teachers of driver training and safety education employed on a full-time monthly basis may be paid from these State funds on the basis of the local salary schedule for academic teachers. The rate of pay of teachers employed on an hourly or part-time basis shall be determined by the local board of education on the basis of the percentage of the time devoted to driver training and safety education in relation to the salary schedule for full time employment.



- b. *Instructional Supplies*—The cost of tests, test devices, printed matter, driving guides, textbooks, and other essential materials may be paid from this fund.
- c. *Car Operation Expenses*—This includes gas, oil, grease; anti-freeze; parts; labor; tires and tubes; washing; and other necessary cost of operation.
- d. *Insurance*—Premiums for all necessary types of insurance.
- e. *Rental of Cars*—Payments for use of non-owned cars.
- f. *Equipment*—Original cars, replacement cars, other equipment.
- g. *Retirement and Social Security*—Contributions by units for matching deductions from salaries of employees.

#### 4. *Accounting Procedures:*

- a. *Administrative Unit Accounts*—The Controller shall establish and maintain an account for each administrative unit for driver education, in which shall be recorded the allotments made to the administrative unit, payments made to the administrative unit and charged against the allotment, the unused balance of funds allotted, the expenditures of the administrative unit for this purpose, and the cash balance of the administrative unit representing the difference between expenditures made and payments received from the Controller.
- b. *Monthly Report and Payment of Funds*—Funds shall be paid by the Controller to each administrative unit monthly as needed if the administrative unit has an allotment balance. The monthly payment shall be based on a monthly report filed by the administrative unit. The monthly report shall contain the budget, expenditures for the calendar month and year to date, budget balance, and request for funds for the succeeding calendar month. This report shall be supported by a voucher register listing the vouchers issued by the administrative unit for this purpose and by a copy of the invoices for general expense items paid in the calendar month. One copy of each of the records referred to in this paragraph shall be filed with the Controller by the 5th of each calendar month.
- c. *Accounting Forms*—The Controller shall design and make available to the administrative units the monthly report forms, voucher registers, and any other forms necessary for the proper accounting for these funds.
- d. *Coding of Expenditures and Receipts*—The following coding shall be used in accounting for expenditures and receipts of this program:

##### *Current Expense Fund Expenditures*

- 671-a. Salaries of Teachers
- 671-b. Instructional Supplies
- 671-c. Car Operation Expenses
- 671-d. Insurance
- 671-e. Rental of Cars
- 671-f. Replacement of Cars
- 671-g. Other Equipment
- 671-h. Retirement and Social Security

*Current Expense Receipts*

960-9. Receipts from State for Driver Education

965-3. Sale of Cars and Miscellaneous Receipts for Driver Training

*Capital Outlay Expenditures:*

687. Original Driver Education Cars

*Capital Outlay Receipts:*

986-2. Receipts from State for Driver Education



## SUGGESTED DRIVER EDUCATION SCHEDULES

For convenience in reviewing the several plans for scheduling a brief description is given for each plan. These descriptions are followed by detailed illustrations of the manner in which each plan operates. Plans II, III, IV, V, and VI are adaptations of the principles given in plan I to illustrate instruction being given in two big blocks of time.

### Description of Suggested Schedule Plans

- PLAN I—Classroom and car instruction being taught in two big blocks of time during the regular school day and year with 30-36 hours time devoted to classroom instruction and 18 hours devoted to each group of 3 students for behind-the-wheel instruction and practice driving.
- PLAN II—Classroom instruction for 30-36 hours in the regular school day and year with 18 hours devoted to each group of 3 students for behind-the-wheel and practice driving instruction during the summer months.
- PLAN III—Enriched program which provides a semester course in Safety Education, including the classroom phase of driver education, during the regular school day and year, with behind-the-wheel and practice driving instruction being offered during summer months.
- PLAN IV—Summer program including the complete course consisting of both classroom and behind-the-wheel instruction.
- PLAN V—Enriched program which provides a semester course in day and year with behind-the-wheel and practice driving instruction being offered in the extended day of the regular school year.
- PLAN VI—Enriched program which provides a semester course in Safety Education, including the classroom phase of driver education, during the regular school day and year with behind-the-wheel and practice driving instruction being offered during the extended day of the regular school year.

## Detailed Illustrations

### SUGGESTED DRIVER EDUCATION SCHEDULE, PLAN I

This schedule is devised to give each student a total of 54 hours of instruction; 36 hours in the classroom and 18 hours in the car. Three students receive in-the-car instruction as a group, with time provisions for each to receive 6 hours of behind-the-wheel instruction and practice driving, plus 12 hours of observation and instruction. This is accomplished by having each group of 3 students spend one hour in the car per day for 18 consecutive days.

Under this plan, classroom and car instruction may be taught to one or more groups of 24 students daily, depending upon teacher time available for this instruction. Each of the two phases of instruction is offered in a time span of sufficient length to permit students to satisfactorily complete them with a minimum loss resulting when the two phases are separated by two or more months. Varying times when respective students reach beginning driver's age can be readily adjusted in this schedule by taking 3 oldest students for car instruction in time span 3; next oldest in time span 4; next oldest in time span 5; etcetera.

Since 18 hours will be needed for each group of 3 students receiving car instruction, the 180-day school year is divided into 10 time spans for 18 days each, as illustrated below.

Time Span 1	Time Span 2	Time Span 3	Time Span 4	Time Span 5	Time Span 6	Time Span 7	Time Span 8	Time Span 9	Time Span 10
18 Days	18 Days	18 Days	18 Days	18 Days	18 Days	18 Days	18 Days	18 Days	18 Days

This division of the school year is then organized for large group instruction (classroom phase) and small group instruction (car phase) as indicated by the following chart. Since the year is broken down into time spans of 18 days each, two time spans, totaling 36 days, are assigned to classroom instruction for 24 students and eight time spans are assigned to car instruction for 8 groups of 3 persons each.

#### 1 Hour Daily For 1 School Year

Classroom Instruction 24 Students	3 Stu. Car Inst.	3 Stu. Car Inst.	3 Stu. Car Inst.	3 Stu. Car Inst.	3 Stu. Car Inst.	3 Stu. Car Inst.	3 Stu. Car Inst.	3 Stu. Car Inst.
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#### Days of School Year

1st	19th	37th	55th	73rd	91st	109th	127th	145th	163rd
18th	36th	54th	72nd	90th	108th	126th	144th	162nd	180th



When 24 students have completed classroom instruction, 3 of them will begin car instruction immediately and continue through time span number 3 after which they must go to other activities where they remain for the balance of the school year. Twenty-one of them must go to other school activities where they remain for the balance of the school year, *except for the one time span of 18 hours during which each group of 3 students receives car instruction according to a master schedule prepared at the beginning of the school year.*

This plan could be varied to permit concurrent instruction if the course is scheduled for multiple periods in the day. It could be done by offering classroom instruction one hour daily and car instruction for 1-5 hours daily for each 36 days of the school year. This variation could provide the complete course for 30 students each 36 days for a total of 150 students in the 180-day school year.

## SUGGESTED DRIVER EDUCATION SCHEDULE, PLAN II CLASSROOM INSTRUCTION IN REGULAR SCHOOL YEAR AND DAY; CAR INSTRUCTION IN SUMMER.

CLASSROOM	Regular School Day of Nine Month School Year: Classroom Instruction for 54 Students					
	Time	Period	36 Days	36 Days	36 Days	36 Days
	1 hr.	1				Classroom Inst. 30 Students
						Classroom Inst. 24 Students

Classroom instruction must precede or be taught concurrently with car instruction

CAR INSTRUCTION REGULAR SUMMER SCHOOL DAY	1 Teacher and 1 Car for 54 Days of Summer: Car Instruction for 54 Students				
	Time	Period	18 Days	18 Days	18 Days
	1 hr.	1	Car Instruction 3 Students	Car Instruction 3 Students	Car Instruction 3 Students
	1 hr.	2	Car Instruction 3 Students	Car Instruction 3 Students	Car Instruction 3 Students
	1 hr.	3	Car Instruction 3 Students	Car Instruction 3 Students	Car Instruction 3 Students
	1 hr.	4	Car Instruction 3 Students	Car Instruction 3 Students	Car Instruction 3 Students
	1 hr.	5	Car Instruction 3 Students	Car Instruction 3 Students	Car Instruction 3 Students
	1 hr.	6	Car Instruction 3 Students	Car Instruction 3 Students	Car Instruction 3 Students

# SUGGESTED DRIVER EDUCATION SCHEDULE, PLAN III

## CLASSROOM INSTRUCTION IN REGULAR SCHOOL YEAR AND CAR INSTRUCTION IN SUMMER

Regular School Day of Nine Month School Year:  
Classroom Instruction for 54 Students

CLASSROOM	Time	Period	1st Semester (90 Days)	2nd Semester (90 Days)
	1 hr.	1	30 Students Classroom Course Driver Education & Safety Education	24 Students Classroom Course Driver Education & Safety Education

Classroom instruction must precede or be taught concurrently with car instruction.

CAR INSTRUCTION REGULAR SUMMER SCHOOL DAY	1 Teacher and 1 Car for 54 Days of Summer: Car Instruction for 60 Students				
	Time	Period	18 Days	18 Days	18 Days
	1 hr.	1	Car Instruction 3 Students	Car Instruction 3 Students	Car Instruction 3 Students
	1 hr.	2	Car Instruction 3 Students	Car Instruction 3 Students	Car Instruction 3 Students
	1 hr.	3	Car Instruction 3 Students	Car Instruction 3 Students	Car Instruction 3 Students
	1 hr.	4	Car Instruction 3 Students	Car Instruction 3 Students	Car Instruction 3 Students
	1 hr.	5	Car Instruction 3 Students	Car Instruction 3 Students	Car Instruction 3 Students
	1 hr.	6	Car Instruction 3 Students	Car Instruction 3 Students	Car Instruction 3 Students



## SUGGESTED DRIVER EDUCATION SCHEDULE, PLAN IV

The following chart illustrates a complete summer program of classroom and car instruction for 36 persons. Twelve persons complete the course each 18 days by devoting two hours daily to classroom instruction and one hour daily to car instruction (the one hour each day for car instruction is normally shared by 3 students). By offering students both classroom and car instruction during one 18-day period of time, it is believed that conflicts with student vacation plans may be prevented.

To provide for most efficient use of automobiles in summer, it may be desirable to employ two part-time teachers for each car used in the summer program. That could permit use of the one car for eight or more hours per day.

In rural areas or for working students, it may be most practical to offer the classroom phase of this course at night.

### COMPLETE SUMMER PROGRAM OF CLASSROOM AND CAR INSTRUCTION

REGULAR SUMMER SCHOOL DAY	Schedule for 1 Teacher and 1 Car for 54 Days of Summer to Accommodate 36 Students				
			Class Group 1	Class Group 2	Class Group 3
	Time	Period	18 days instruction	18 days instruction	18 days instruction
	1 hr.	1	Classroom Inst. 12 Students	Classroom Inst. 12 Students	Classroom Inst. 12 Students
	1 hr.	2	Classroom Inst. Same 12 Students	Classroom Inst. Same 12 Students	Classroom Inst. Same 12 Students
	1 hr.	3	Car Instruction 3 of 12 Students	Car Instruction 3 of 12 Students	Car Instruction 3 of 12 Students
	1 hr.	4	Car Instruction 3 of 12 Students	Car Instruction 3 of 12 Students	Car Instruction 3 of 12 Students
	LUNCH				
	1 hr.	5	Car Instruction 3 of 12 Students	Car Instruction 3 of 12 Students	Car Instruction 3 of 12 Students
	1 hr.	6	Car Instruction 3 of 12 Students	Car Instruction 3 of 12 Students	Car Instruction 3 of 12 Students

SUGGESTED DRIVER EDUCATION SCHEDULE, PLAN V  
CLASSROOM INSTRUCTION IN REGULAR SCHOOL YEAR AND DAY; CAR INSTRUCTION IN EXTENDED SCHOOL DAY

Regular School Day of Nine Month School Year: Classroom instruction for 60 students						
Time	Period	36 Days	36 Days	36 Days	36 Days	36 Days
1 hr.	1	Classroom Inst. 30 Students	Classroom Inst. 30 Students			
Classroom instruction must precede or be taught concurrently with car instruction.						

EXTENDED SCHOOL DAY OF NINE MONTH SCHOOL YEAR 1 TEACHER AND 1 CAR FOR 180 DAYS: CAR INSTRUCTION FOR  
60 STUDENTS

CAR INSTRUCTION									
Time	Period	18 Days	18 Days	18 Days	18 Days	18 Days	18 Days	18 Days	18 Days
1 hr.	7	Car Inst. 3 Stu.	Car Inst. 3 Stu.	Car Inst. 3 Stu.	Car Inst. 3 Stu.	Car Inst. 3 Stu.	Car Inst. 3 Stu.	Car Inst. 3 Stu.	Car Inst. 3 Stu.
1 hr.	8	Car Inst. 3 Stu.	Car Inst. 3 Stu.	Car Inst. 3 Stu.	Car Inst. 3 Stu.	Car Inst. 3 Stu.	Car Inst. 3 Stu.	Car Inst. 3 Stu.	Car Inst. 3 Stu.

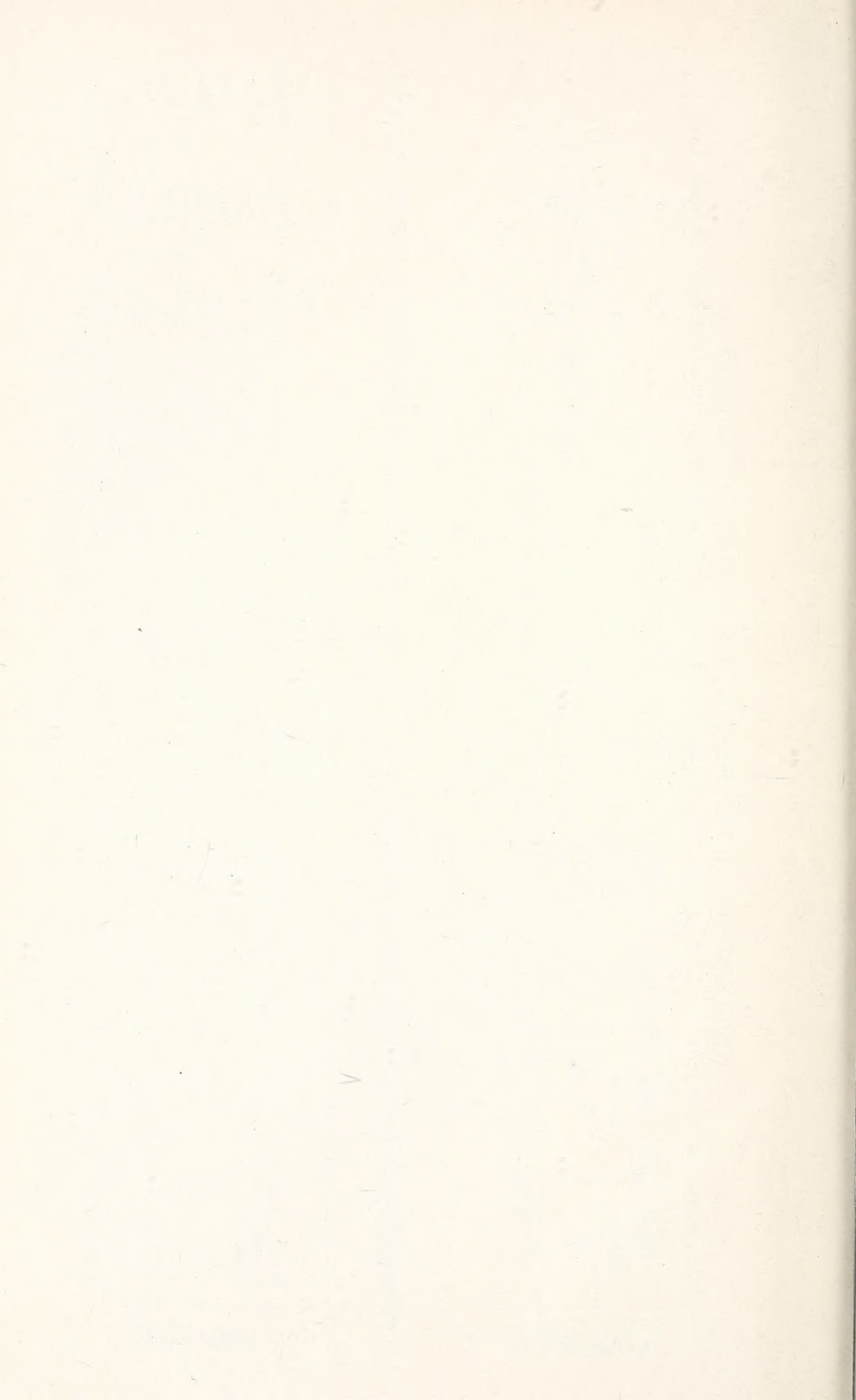


**SUGGESTED DRIVER EDUCATION SCHEDULE, PLAN VI**  
**CLASSROOM INSTRUCTION IN REGULAR SCHOOL YEAR AND DAY; CAR INSTRUCTION IN EXTENDED SCHOOL DAY**

Regular School Day of Nine Month School Year: to accommodate 60 students			
Time	Period	1st Semester (90 Days)	2nd Semester (90 Days)
1 hr.	1	30 Students Classroom Course Driver Education & Safety Education	30 Students Classroom Course Driver Education & Safety Education
Classroom instruction must precede or be taught concurrently with car instruction.			

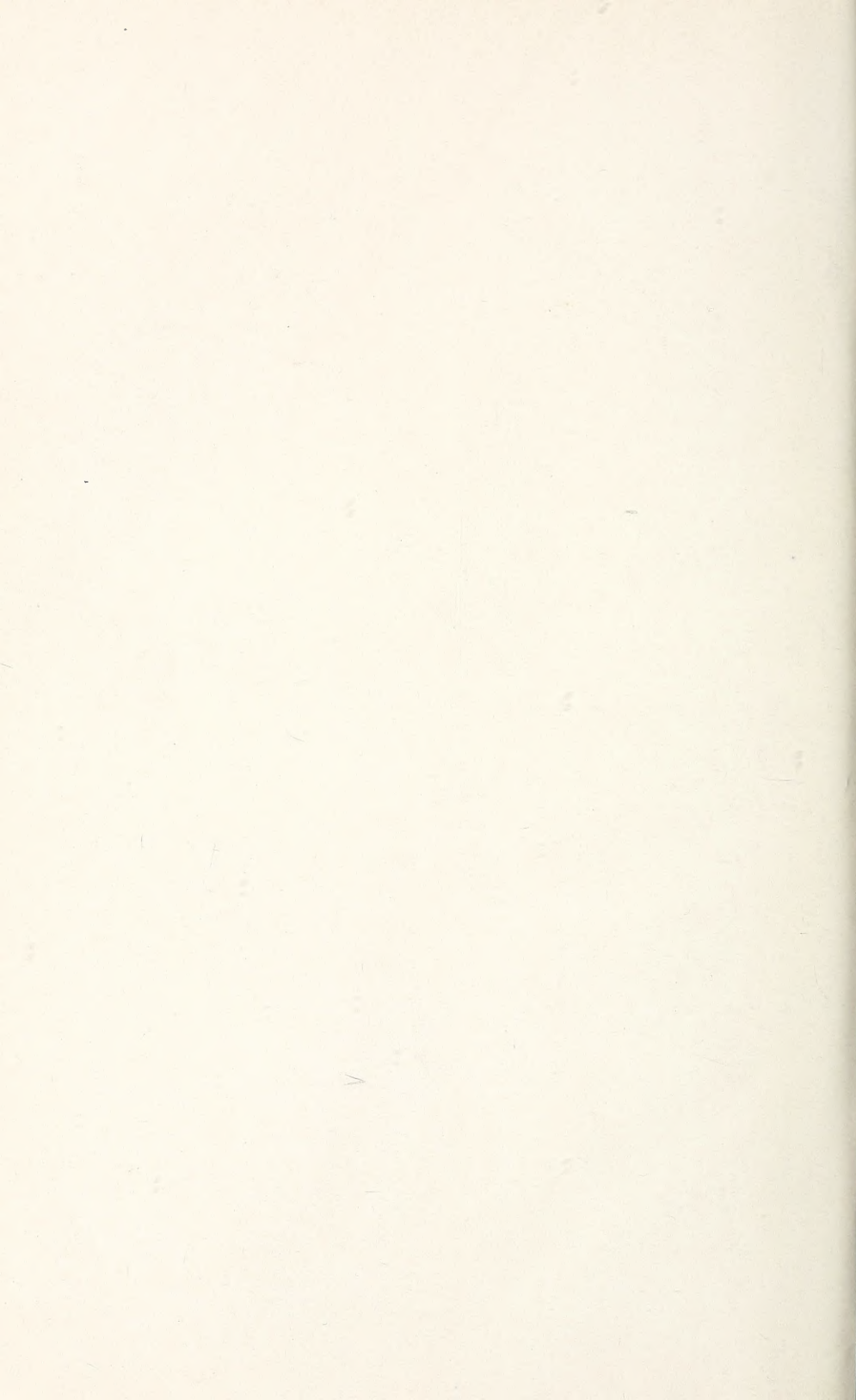
**EXTENDED SCHOOL DAY OF NINE MONTH SCHOOL YEAR: 1 TEACHER AND 1 CAR FOR 180 DAYS: CAR INSTRUCTION FOR  
60 STUDENTS**

CAR INSTRUCTION										
Time	Period	18 Days	18 Days	18 Days	18 Days	18 Days	18 Days	18 Days	18 Days	18 Days
1 hr.	7	Car Inst. 3 Stu.	Car Inst. 3 Stu.	Car Inst. 3 Stu.	Car Inst. 3 Stu.	Car Inst. 3 Stu.	Car Inst. 3 Stu.	Car Inst. 3 Stu.	Car Inst. 3 Stu.	Car Inst. 3 Stu.
1 hr.	8	Car Inst. 3 Stu.	Car Inst. 3 Stu.	Car Inst. 3 Stu.	Car Inst. 3 Stu.	Car Inst. 3 Stu.	Car Inst. 3 Stu.	Car Inst. 3 Stu.	Car Inst. 3 Stu.	Car Inst. 3 Stu.



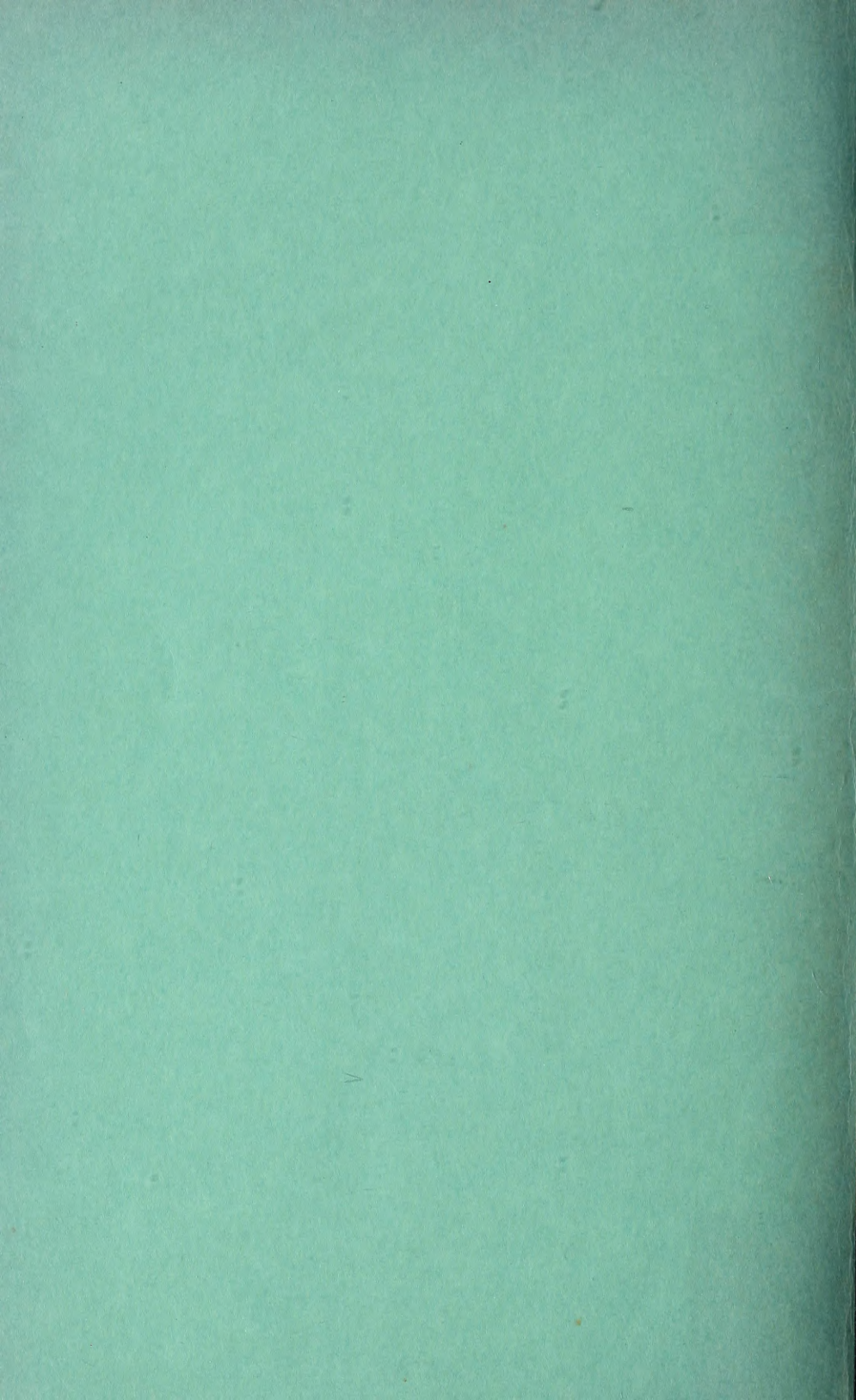














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